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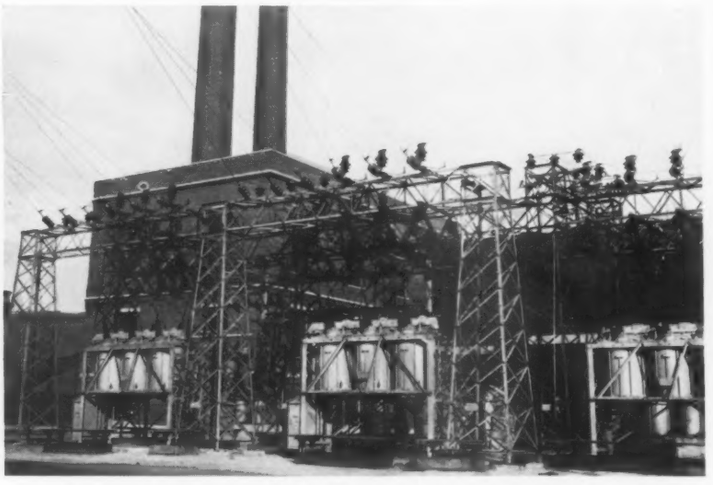

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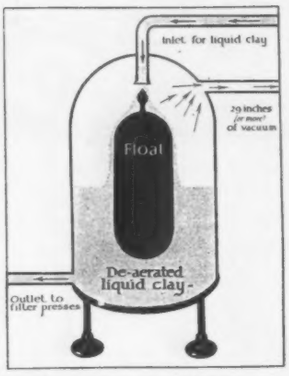
This close-up shows the Lapp Cotter Key in place. Forward contractions lock key in place when withdrawn.



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Another Reason Why
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COST MORE TO MAKE

CONSIDER this ball socket insulator's cotter key—eliminating much petty annoyance.

IT locks definitely in two positions—within the insulator or drawn back for insertion of the ball. Withdrawn at the base of the tower, it remains in place, without possibility of jamming, until your lineman up above drives it in. How much time such a cotter will save him may surprise you.

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OF heavier stock than usual, it requires special forming, special assembly at the factory—adding a few pennies to our cost, but cutting your installation cost by dollars.

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ELECTRICAL WEST

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Volume 65
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G. C. TENNEY, *Editor*

LOAD BUILDING is the primary concern of the industry today. To the dealer it means more wiring and appliance sales, to the wholesaler more supplies, to the manufacturer busy factories and active payrolls, to the central station better loaded facilities and steady employment of its construction crews, and to the public more comfort and convenience. This issue analyzes and reviews the methods and ideas which have proved useful in past activities, as a guide to better load-building planning for the months ahead:

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BOTH in Oregon and Washington voters will be faced with government ownership bills at the November polls. The measures are revamped editions of proposals that have been defeated in past elections. However, Oregon power companies are taking no chances, and are carrying their messages to the public by means of noteworthy advertising campaigns. (See page 164.)

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NO ARIZONA delegates watched Secretary Wilbur officially begin construction of the Boulder Dam project on Sept. 17 at Las Vegas, Nevada. Instead Arizona concentrated upon preparation of the injunction suit that is to be placed before the Supreme Court in Washington at its opening on Oct. 9.

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A. I.E.E. convention broke attendance records, discussed the intricate technical phases of power development and intercommunication. The engineers were thrilled by the promise implied in the rapid strides recently made in two-way radio 'phone communication between aircraft and the ground—a promise which means so much in safety of air travel and commerce. (See page 206.)

The Month

INSPECTORS met last month in Bellingham, meet this month in Pasadena, to co-ordinate their interpretations of wiring codes and ordinances. How far may adequacy be legislated, how much must be sold, they ask themselves, while various factions in the industry debate the low cost vs. high standards question. (See page 218.)

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SALEMEN are the front line troops of the electrical industry. How the commercial department chiefs of staff of Western companies recruit, train and direct their shock troops is contrasted in an interesting symposium. (See page 166.)

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SEQUEL to "Who Sells Appliances" naturally would be "Why and How?" Last year's survey by ELECTRICAL WEST is treated in perspective and in some ways the best part of the story is told for the first time. A useful appraisal of electrical merchandising outlets it should prove to those who would know the complete answer to these questions. (See page 190.)

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WIDE OPEN spaces, for which the West is already well known in fiction, require a special sort of merchandising organization to serve them efficiently. How two companies meet this problem successfully is an interesting and human story. (See page 180.)

Editorial

Northwest Utilities Combat Government Ownership Bills

GOVERNMENT ownership enthusiasts in Oregon have placed on the November ballot the Grange district power bill which savors of the oft-defeated California water and power act, and at the same time are backing a gubernatorial candidate who would abolish the Public Service Commission. In Washington another group is fostering a district power act that varies but slightly from the Erickson bill which was defeated in 1924.

Particularly noteworthy are the advertising campaigns of two of the Oregon power companies designed to combat the arguments of the backers of the district power bill and at the same time dispel the popular fallacy that electric rates are high in Portland. One series features statements by Oregon industrial, financial and agricultural leaders commenting upon electric service and rates in Oregon. That these strike an effective keynote is shown by the following quotation from one of the best known industrialists in the state:

"Now suppose we Oregon folks 'junk the power companies' and duplicate their plants. Who pays for the new plants? Or suppose we buy the power companies. Who pays the bill? Nobody but the Oregon taxpayers of course. Would we get lower rates? How could we? The power companies take all of the risks of the business, pay Oregon stockholders dividends, pay huge taxes to Oregon governments, and still sell power for less in Portland than it costs users almost anywhere else in America. That takes mighty efficient management. No municipal plant could do any more. We all know that most of them don't do as well, even though exempt from taxes and paying no stockholders' dividends."

Among the startling facts brought out by the other series is that electric bill and taxes combined for an average residence in Portland are cheaper than for a city noted for its low rates under municipal ownership and for another city using power from Niagara Falls.

In both of the campaigns the old slogan of government power development, "without cost to the taxpayers," is shown to be political fiction, that "cheap" power under government ownership is a myth.

The Threshold of the Electrical Era

TRANSITION from one industrial era to another is seen in the present business depression. The past cycle of prosperity had its principal support in the construction and automobile industries. The new era promises to draw its impetus from further development of the electric power and gas industries. Trends in the development of these activities will furnish the backbone, some economists believe, for as enduring a cycle of prosperity as that which ended last October.

From the standpoint of the electrical industry this forecast is based upon the assumption that as more widespread use is made of electrical energy, rates will be reduced. Lower prices will stimulate railroad electrification and will result in greater consumption by industries, domestic consumers, and on farms.

The industry admits that the household market has only been scratched. Electric ranges, water heaters, refrigerators, air heaters, and other appliances and services have still to find their growth. In the case of refrigerators alone, a potential market at least equal to that for automobiles exists.

Mass methods of production are ready on all of these appliances. Mass methods of distribution are not. By solving the distribution problem the electrical industry will make its initial contribution to this new era.

Like One, Like All

UNFAIR though it may be, nothing alters the fact that the reproachful act of one individual will stigmatize the entire organization or group of which he is a part. This is as true of the acts of an Electragist member as it is of a power company salesman, a manufacturer's or jobber's representative, or a lineman, telephone operator or meter reader. When one individual forgets his responsibility to his group, breaks his word or fails in his performance, it is only natural that the organization to which he belongs be considered to have failed. In a sense, it has failed.

A contractor-dealer, for instance, whose shop displays the Electragist symbol, affects not alone his own standing if he rides roughshod over good business ethics in his zeal to procure a job or exact more than a legitimate profit from it. He labels

all Electragists as sharpers, unscrupulous in their dealings.

The salesman of power company, jobber or manufacturer who defames competitors or steps beyond the bounds of business or even social propriety in order to make an immediate sale, brands his own company with his act. No matter how sincere or fair-minded the executives of such companies may be, how fine the policies they have enunciated, the brand is placed on all alike.

The sharp-tongued telephone operator, the discourteous clerk, the thoughtless lineman, by his actions or words, similarly stigmatizes his own company or organization.

Employment by a strong and reputable business concern or membership in an association carries with it more than simply the benefits that accrue to the individual. Sharing these benefits, the individual must also shoulder his proportion of the responsibilities. He should be carefully instructed that in casting his lot with company or association, he must accept its discipline, its policies and its program. His own actions from that moment take on a wider significance. He has ideals to uphold.

Too many of the difficulties that have arisen within and between companies and organizations in the past can be traced to laxness in the education, the informing, and the inspiring of individual members of the companies themselves or of the various groups.

Utilities Can Engage in Politics

IS A UTILITY legally justified in fighting the attacks of municipal ownership advocates and others? It is, in the opinion of the California State Railroad Commission which has recently handed down a decision dismissing an investigation into the expenditures of southern California utilities for political purposes and the diverting of the time and efforts of employees to the advancement of political causes.

Two commissioners in a dissenting opinion laid down restrictions upon the utilities. These were that (1) the full cost of political activities must be charged against and borne by corporate surplus to the end that none is reflected in current operating expenses, and (2) any utilization of the regular operating force must be such as not to impair or detract from the standards and character of the service to which the public is justly entitled. The commission found that the utilities complied with both of these regulations.

Most significant was the concurring opinion of one commissioner who stated: "The control of the corporate acts of any corporation, including public utilities, is placed directly in the hands of the board of directors of such corporation, and the duty of the director is that of the highest trust and authority in connection with the affairs of the corporation. . . . It is their duty to promote the interests of the stockholders and the corporation . . . to take whatever steps are needful to protect the business of the corporation as a whole, to prevent if possible the severance of its property and the unwise taking thereof by a municipality, and to expend the funds . . . for the benefit of the stockholders. This commission cannot usurp the duties of the board of directors."

The right of a utility to protect its corporate interests, the interests of its stockholders, and those of the public it serves has been challenged frequently by the press and by politicians. The decision of the California commission in this matter should quiet these critics.

Electric Time Means More Than Kilowatt-Hours

SURPRISING in its widespread significance has been the effect of electric time. No load for the power companies, it is true, since each clock uses so little current, yet its effect has been far reaching.

In the first place, the electric clock caused the central stations to become acutely conscious of interruptions, and to regulate the frequencies of their systems accurately, something which might not have come about for years in the ordinary course of events. This has had important interconnection consequences.

Perhaps far more significant has been its effect upon the consumer. There has been something particularly appealing in the idea of clocks free from the need for winding, which run always on time. They have made customers more dependent upon their electric service than ever. On the other hand, to the central station electric clocks have meant another unique form of public service.

Not the least significant fact, and perhaps accounting in large part for the popularity of the electric timepiece, has been that in its use the power company has been able to give its consumers that always desired "something for nothing" for which the public is ever seeking.

SALESMEN—

All Western Companies Were Asked These and Many More Vital Questions Concerning Their Sales Staffs, and Here Is Presented a Symposium of Their Methods as Reported by Their Answers

THE SALESMAN is the load builder, the revenue producer for the power company. His activities, resulting in the sale of current-consuming devices, are responsible for the increasing consumption of electricity per capita per annum, for the attractive figure of merchandising sales profit on the one hand and of increasing revenue per meter on the other.

More than this, he is a contact man between the power company and the public. Along with the meter reader, the bill collector and the trouble man, he represents the company to its customers; he is one of the personifications of the service it renders. By spreading the gospel of the benefits to be derived from electrical equipment he removes many of the causes of dissatisfaction, converting the too frequently disgruntled minimum consumer into the proud owner of an electric range, or at least of an iron and electric toaster.

The salesman plays an important role in interindustry relationships. His attitude toward his competitors in the field determines in large part the friendliness or ill will which prevails between the power company and other merchants handling electrical lines.

A good salesman is proverbially difficult to obtain, to train and to keep at the topmost pitch of his income-producing capacity. How do the power companies of the West set about attaining that greatest possible asset, an ideal sales force? In order to obtain the answer to this inquiry, a questionnaire was sent out to the leading central stations of the district west of the Rocky Mountains, covering such items as source of material, compensation, and methods of training. Upon the sixteen replies received the following analysis is based.

The number of appliance salesmen employed per residence consumer varies widely among the different companies. Two utilities report figures well over the one salesman per 1,000 domestic consumers which has been currently set up as a mark to shoot at. The largest proportional number of salesmen employed was by a Northwestern company which has one appliance salesman to every 546 residence consumers. Another company reports one salesman to every 810 consumers, another, from the Intermountain district, one to every 1,080. Several companies attain a figure of one salesman for every 2,000 to 3,000. The lowest proportion comes from a company merchandising only the larger appliances, which reports one salesman to every 9,500 customers.

It was interesting to note that where the district representative plan was contemplated, the figure varied from 1,000 to 3,000 meters allotted to each man to handle. One of the companies most actively merchandising, which now reports one salesman per 2,000 residence consumers, states that a far larger sales force could be beneficially employed.

How Many Home Economists?

This sales force is in a number of cases most amply supported by an active force of home economists. One company employs twelve young women, most of them college graduates, and reports that every range sale is followed up at least once and in some cases several times. Another company has adopted the plan of an auxiliary sales force of young women who combine demonstrating with store sales to good effect. Two companies out of the fourteen reporting on this question, on the other hand, employ no home workers or demonstrators at all; several utilities report one, two or three employees in this field. Where the company shows real interest in this type of follow-up work, the number employed varies from one home economist to every ten salesmen to one for every sixteen men in the field or store.

Where Do You Get Them?

The answers to the question referring to the sources from which salesmen are obtained show that most companies turn first to their own employees in other departments, particularly to the men in the service and meter departments. Many of them mentioned this source as that furnishing their best salesmen, On the other hand, six of the companies reporting found their best help from outside. One company among those employing the largest number of salesmen states that it obtains its best salesmen from those having sales experience in affiliated lines and who have some contact with central station work. Another large company likes former automobile salesmen and men with experience in selling Fuller brushes or aluminum ware. Three companies make use of advertising to obtain help and one company reports this its

How Do You — Get Them? Train Them? Keep Them Working?

source for best material. Other companies state that advertising is unsatisfactory as a source for sales help. The local Chamber of Commerce has proved helpful in obtaining good men in one locality, and the university has furnished excellent salesmen in another.

Training Salesmen

Six of the reporting companies start their salesmen out with class instruction covering company policy, and talks from manufacturers and jobber representatives on the various lines carried. One company in the Northwest allows its new employees to spend their first week contacting jobbers and distributors, attending their schools if any such instruction is available. Another Pacific Coast employer encourages visits to factories. One company pays 50 per cent of the cost of any course in salesmanship or utility subjects which the employee actually completes. One utility with a widely scattered territory offers a correspondence course in the principles of selling and also sends a specialist in given lines of merchandise from time to time throughout the territory.

Two companies start their men with from six weeks' to two months' store experience before putting them in the field. The first step in actual field work, and in several cases the only training offered, is to send the man into the field under the supervision of an older salesman for the first period of probation. Usually there are some sort of regular meetings at which sales problems are discussed, sometimes weekly, sometimes every morning. Two companies have trial periods of about three months before the salesman is accepted for permanent employment.

In only one case is a kit of printed material, including a booklet on company rules and policies, supplied, although in several instances an effort is made to provide the new salesman with printed matter from jobber and manufacturer. Eight companies report no printed matter furnished at all, one adding that undoubtedly such material would prove helpful.

In discussing changes and plans for the future, one company, which already does as much as any other at the present time to train its men, expressed the feeling that much more effort could profitably be spent in acquainting the new salesmen with the merchandise they are expected to handle and with the principles of salesmanship.

How Are They Paid?

The method of compensating salesmen has been the subject of wide discussion with a significance far beyond the mere differences in money value involved. Two companies have adopted a straight salary basis for payment of salesmen, undoubtedly believing that in this way they can maintain control of their activities, developing a friendly competition with others selling in the same field. The interest of the salesmen is kept up by sales contests for which cash prizes of some value are given, but with the best of success it is improbable that a salesman's earnings from this source can amount to more than 10 per cent of his salary. One company, which pays on a salary plus commission basis, bases its commissions for the sale of larger appliances upon the kilowatt load which they place upon the line and permits the salesman to sell for dealers as well as for the company direct. Those selling smaller appliances are compensated upon the dollar value of equipment sold. Two companies vary from the general rule in that they pay salary plus annual commission, based in these cases upon the earnings of the entire company as well as upon the individual salesman's efforts. This, they feel, gives a feeling of company loyalty and interstaff co-operation not obtained when rewards are purely competitive. The usual basis of compensation, however, as reported by eleven of the companies, was salary plus commission based upon the dollar value of the merchandise sold. The actual figures reported varied but it is difficult to make a comparison because of the difference in the nature of the merchandise sold. In one or two cases the preference was for a straight commission payment, with a guaranty of from $50 to $100. Two companies do not use the bonus system at all, but in most cases it is used in the form of prizes awarded during special campaigns.

In no case is there any limit placed upon the amount of money which the individual may earn, but one company expresses a general sentiment when it states that it does not believe it advisable for a man to receive a very large income one month and a very small one the next. Salesmen's earnings, therefore, are very carefully scrutinized and an effort is made to keep them fairly uniform. One company reports with pride that all of its employees are able to earn a fair living wage. Where straight salaries are paid, these range from $100 to $250 depending upon the nature of the work performed. In determining the amount of commission allowed, a safe rule applied by several of the companies is to use the revenue producing value of the merchandise sold as a measuring stick.

Determining Quotas

The quota system is universally employed, with some variation in the method of determining the amount. The company recompensing salesmen upon the basis of kilowatt load added requires 110 kilowatts of connected load each month. One company with an extensive crew of range specialists calls for the sale of two ranges per week during ordinary periods and three during campaigns, depending upon the amount of sales helps offered. Monthly quotas fixed in terms of dollar value of merchandise sold vary from $1,000 per month to $2,500 per month. Operating records, local sales history, financial conditions, crop conditions, bank reports, the attitude of the local populace toward electrical appliances and electric rates in effect are major considerations in fixing the quotas. One sales manager writes in this connection:

"In general it is our experience that we can secure a higher sales per customer in our smaller towns than we can in our larger ones. Without going into causes for this condition, we consider the size of the town in assigning the quota on a sales per customer basis. As an example, our smallest towns—that is, that group having up to 500 meters, received a total quota last year of $42 per residence customer. The next group, which included districts serving from 1,000 to 1,100 meters, received

quotas of approximately $39 per customer. The third group, containing towns or districts of 2,000 meters, received quotas of approximately $36 per customer, while two cities of 5,000 and 10,000 inhabitants, were given quotas of $25 and $17 per customer respectively. The difference is primarily due to the fact that we are still developing our organization in these larger towns. Past performance does not influence us greatly in making our quotas."

One company with a widely settled district depends very largely on carefully assigned quotas to keep its sales staff up to the peak of their abilities. Last year its actual sales totaled 99 per cent of the quotas assigned. Another company states that quotas are purposely fixed low so that they are within reasonable distance of success, but that in addition a higher goal is set as a hope for possible attainment, with special rewards offered if it is reached.

Do You Furnish Transportation?

Cars are furnished salesmen to a limited extent. Occasionally these are confined to those on a salary basis, men with commissions supplying their own. In some cases transportation is available to a district but by no means every salesman is furnished with a car. Where allowance is made for use of the salesman's own car this is either on a flat basis, such as payment of $25 for city use and $35 in the country, or on mileage, a typical sum being 6 cents per mile. One company which makes a flat allowance limits this to not more than 2 per cent of the salesman's gross sales, or more than 10 cents per mile of travel. In most cases no special allowance is made, but the salesman is expected to pay this expense out of the extra generous commissions paid.

Are Salesmen Protected?

With only two exceptions the district plan of assigning prospects is used. The two companies who use the open system, with prospects assigned to the individual by the sales supervisor, are both working toward the district plan. The salesman is protected in his prospects in every case, but the time allowed him varies from 30 to 90 days to an indefinite period to be terminated at his own request if he thinks other sales effort should be made. One company allows a commission to the salesman only if he can show that he has called upon the prospect within 30 days of the time the sale is made.

Specialists vs. General Salesmen

Four companies report that they use no specialists but that their salesmen sell the entire line—usually this means an exception in the case of commercial cooking and refrigeration. One company employs specialists only. Most companies combine the two systems, using specialists in the city or for certain of the larger appliances in groups, such as range and water heater; vacuum cleaner, washer and ironer; refrigerator and radio and like combinations. One company states that it has found best results to be obtained when a salesman can concentrate on not more than two lines. Another company assigns each salesman the entire line, but allows him to specialize on those he shows he can handle best, at the same time educating him in the other fields until he can take them over as well.

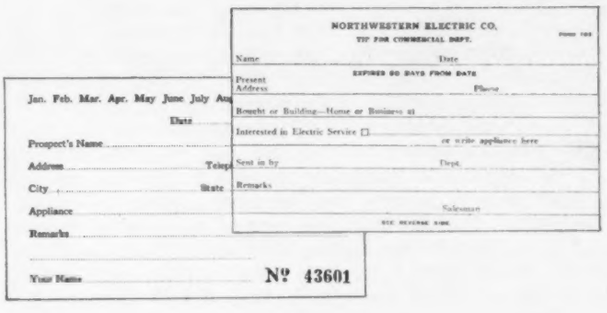
In general, special salesmen are assigned to rural extension work, although several companies report that their general salesmen in rural fields work when advisable with their extension men. "The best time to make sales is when the line is first completed," states one sales manager.

Straight Selling vs. Campaigns

All power companies reporting use some system of special drives, plus, of course, a continuous sales effort on all major lines. Five of the companies find monthly specials most satisfactory, others state that their campaigns vary from 30 to 90 days. Two range campaigns, one on water heaters and a refrigeration drive in the summer is the program for another company. A continuous series of interlocking special events of varying lengths, sometimes two or more running simultaneously, is the method reported by still another. "Continuous sales effort with only occasional seasonal campaigns produce best results," states another.

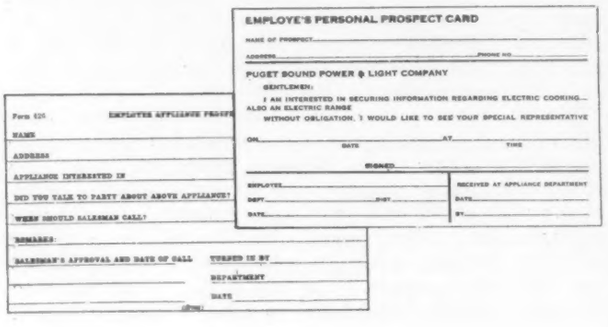
Employee Co-operation

Employee co-operation in furnishing prospect tips is asked by practically all of the companies, and special blanks are provided in most cases. Some confine this request to the larger appliances only, while one company asks for prospects from employees outside the sales department only in connection with special campaigns.



The amount paid varies from a flat sum on a sliding scale dependent upon the dollar sales value or the load-building value of the appliance, to a percentage allowance which in one case is from 2½ to 5 per cent of the sale, or the more general figure of 2 per cent, and in one case 1 per cent. The cash allowance for the name of a prospect to whom a range is later sold runs in the neighborhood of $2.50 or $3. The extent of employee co-operation varies, apparently, according to the effort made to secure it. One company reports that it has been "very successful" in securing employee interest, another that it is aiming at 100 per cent co-operation and has secured it in some districts, while still another states that the larger part of its prospects come from employee tips. Service men and collectors take greatest advantage of the offer, according to the experience of one sales manager.

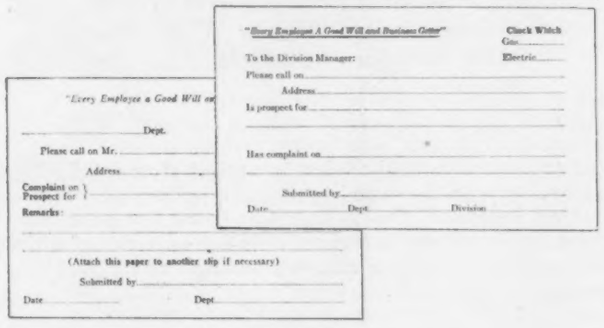
Few of the companies reporting, on the other hand, permit employees outside of the sales department to earn commissions by completing the sale. "Only in small towns where we have no regular salesmen," states one company. "Once a year during our employee's lamp drive," says another. "Occasionally," says a third, add-



ing that on such occasions a small bonus is paid in addition to the prospect payment. Three companies state that all employees are permitted to sell if they desire but add that the participation is not very great. One company permits the sale of auxiliary heating appliances with a 10 per cent commission and very good results. Where general permission to sell is given, the commission allowed is either a flat sum or about 5 per cent of the cash price for closing the sale.

Keeping Up the Morale

Sales work is frequently discouraging. The salesman in the nature of things spends much of his time working by himself, with a large part of his contacts with the public negative ones. One of the major problems of the sales manager is to keep his men optimistic and enthusiastic, so that they will work their best, both for the sake of their own reward and that of the company.

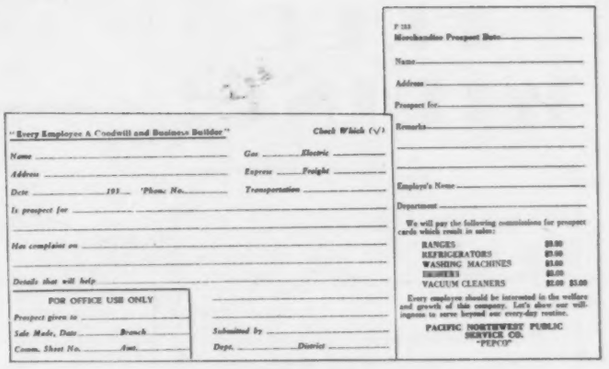


Sales promotion methods are not unlike in all cases reported, although they frequently vary in details. In most cases frequent meetings are held, sometimes in the form of daily morning meetings before going to work plus monthly dinners, in other cases weekly evening sessions of some length. These are supplemented by sectional meetings and annual conventions. It is important that the executives of the company show a definite interest in the sales work and that they themselves attend these principal meetings.

Sales contests, with featuring of the high man, weekly bulletins, monthly house organs, district rivalry, membership in the P.C.E.A.—these are among the methods suggested for keeping up morale. Nothing can take the place of personal contacts—and every effort is made for the supervisor to keep in touch with the men in the field, judging when they need encouragement and individual help. A streak of the "blues" can sometimes be cured by sending a man out in company with another for a brief period of team work. Several sales managers stress the importance of giving the salesman the opportunity to progress, raising his salary as he earns it and seeing to promotions as vacancies occur. Athletics and employees' mutual benefit associations are emphasized by one company as important in keeping up morale. Where the district is scattered and personal contact is infrequent personal letters must supplement the regular sales bulletins. Sales helps and printed information are of course furnished as desirable.

Labor Turnover

Figures on labor turnover are difficult to compare, as it is impossible to determine whether or not temporary sales help has been included. One company which reports a three times turnover specifically includes the temporary fixture and lamp crews which are added each fall. From other companies, figures of 50 per cent, 25 per cent, 20 per cent, 15 per cent, 10 per cent, and 4 per cent are given, with other such unspecified amounts as "very small," "small," and "negligible after the probation period."



Nearly every company has some form of employee prospect card or slip, a few of which are shown on this and the facing page

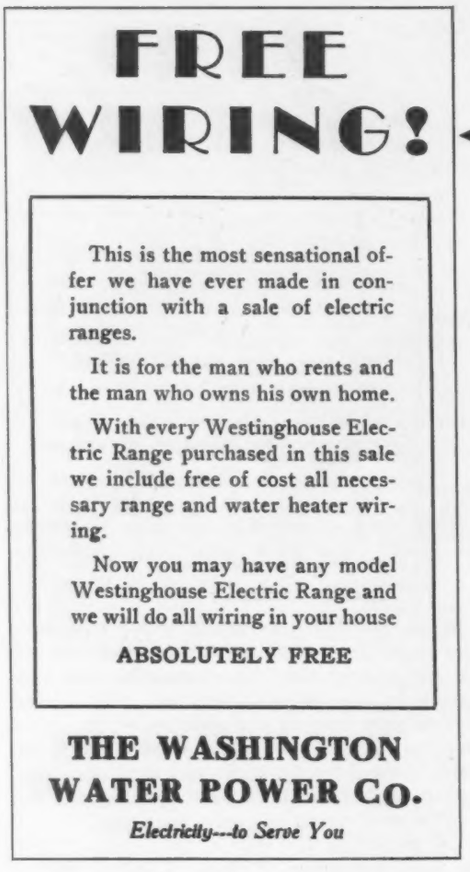
Changes Foreseen

More man power and a better training for salesmen are foreseen as needs by several of those in charge of sales work. At the present time few companies give any extensive training in salesmanship and but one or two give instruction to new men in the policies of the company and the nature of the merchandise sold. "Range salesmen should know how to cook, washing machine salesmen to wash clothes, and vacuum cleaner men to clean the house," according to one sales manager. "How many of them are given any training in these lines?" Not to mention the fact that many of them have had no instruction in the theories and practical methods of selling.

Secondly, there is apparently a need for still greater contact between supervisor and men in the field. A personal knowledge of the men on the force will bring out the best in each and solve sales problems before they arise.

There seems to be a tendency in the direction of the district representative plan, although in most cases perhaps it will go no further than the definite assignment of a salesman to a district, as well as a district to a salesman. The personal contacts built up during one campaign thus carry over to help during the next.

More than one sales manager is considering the problem of the payment of his salesmen in the light of the relationships of his company both with the public and with other branches of the electrical industry. It is rather interesting that two companies have adopted the straight salary payment plan and that one pays its salesmen on a basis of the kilowatt load added to the line. The more usual method of payment by salary plus commission, based on the dollar value of the merchandise sold, undoubtedly produces intensive sales effort on the part of the salesman, but the additional need to observe ethical selling methods at all times has led to the consideration of other plans as perhaps better adapted to produce the desired results. Will the salesman who must meet a quota and whose income is proportional to the number of sales made on a dollar basis always abstain from high pressure methods, always observe fair competitive honor, as against another salesman in his own company or against the employee of another concern? Can equally satisfactory sales results be obtained with other methods of payment? These are problems which are being faced all over the country. The experiments under way in the West which aim to find their solution are being watched with interest.


FREE
WIRING!
This is the most sensational offer we have ever made in conjunction with a sale of electric ranges.
It is for the man who rents and the man who owns his own home.
With every Westinghouse Electric Range purchased in this sale we include free of cost all necessary range and water heater wiring.
Now you may have any model Westinghouse Electric Range and we will do all wiring in your house
ABSOLUTELY FREE
THE WASHINGTON WATER POWER CO.
Electricity---to Serve You

Small, effective card inserted with bills at start of campaign

CAN It Be Done?

Success of the First Campaign Featuring Free Wiring of Ranges and Water Heaters Would Signify That This Most Stubborn Obstacle Can Be Removed

A VERY considerable punch was inserted into the recent Westinghouse range campaign conducted by The Washington Water Power Company, Spokane, through the offer of free wiring to purchasers during the campaign period, according to R. B. McElroy, assistant sales manager. The campaign was the second of the customary two campaigns conducted each year by the company and ran from June 16 to Aug. 16. All previous records were broken, in spite of the alleged depressed times, when 797 ranges were sold, reaching 160 per cent of quota. In the previous camapign of this year conducted in the spring, free wiring was not offered, and 528 ranges were sold, which leads to the assumption that free wiring was a large factor in the record made.

In planning the second campaign one month later than the spring campaign, it was felt that some outstanding appeal would be necessary in order to attract business at a time when the natural inclination of customers would be to retrench and refrain from buying.

It has long been recognized by commercial men that the cost of wiring an electric range is one of the principal resistances to the sale of the device, and it was decided to offer in the summer campaign all the necessary wiring for range and water heater free, in lieu of any other premium or major inducement. A further thought in this connection was that free wiring would open a new and fertile field of range prospects among the renter class and if the campaign was successful in reaching a large number of this class, future resistance to range sales in such houses would be materially reduced.

Other appeals made in the campaign were that the down payment should be only $1, and that present cooking equipment would be taken in as part payment. Selling prices were not increased to take care of any part of the wiring expense. The factory-suggested list price was used, as has been customary, for the cash price, while the ordinary nominal carrying charge was added for sales on a term basis.

Effect of Free Wiring

The effect of these appeals and the results obtained are noted as follows. A quota of 467 Westinghouse ranges, divided about equally between Spokane on the one hand and the outside districts on the other, was set up and divided into district quotas. The free wiring offer applied only to Westinghouse ranges. Out of the 797 ranges sold during the campaign period, 741 were entitled to free wiring. Out of these 741 sales, the homes of 443 purchasers required wiring, other purchasers of this range, who already had wiring in their homes, being given a straight 10 per cent discount from the sale price. Of the 443 homes wired free, 107 were rented homes and 336 owned homes.

The wiring of the 443 homes cost $16,614.41, or an average of about $37.50 per wiring job. It should be noted that all of these jobs included the wiring for a water heater as well as a range. The 10 per cent discount offered to purchasers already having wiring amounted on the average to about one-half of what it would have cost to wire the home, so that such purchasers received a relatively small benefit. No particular complaint was forthcoming from this class of purchaser, however, since he was told that the purpose of the offer was primarily to wire as many homes as possible.

All the wiring was farmed out to electrical contractors in the territory on the basis of cost plus 25 per cent. In a very few instances in small communities having no local electrician, the company found it necessary to do this wiring itself, but the company has for a long time maintained a policy of having all such electric wiring done by regular contractors whenever possible.

The offer to take in present cooking equipment was limited by a maximum allowance of 10 per cent of the amount of the sale. Judgment was exercised, however, in accordance with a fairly well established policy which has been in existence for some time relative to allowances for gas or hard fuel stoves, and much of the equipment taken in was credited at less than the maximum allowance of 10 per cent.

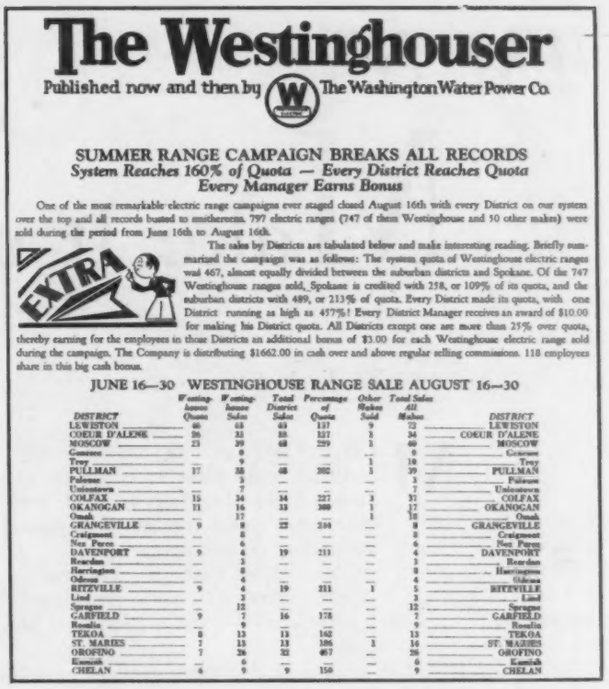
Practically all of the advertising was done through daily and weekly newspaper copy in the territory. Only one piece of direct mail copy, a small insert in the bill of each residential customer at the beginning of the campaign, was used. All the advertising featured the three appeals with particular stress on the free wiring offer.

Load Built at No Cost

The cost of the wiring incurred during the campaign was charged direct to merchandise sales so that it in no way affected any account other than the net merchandising revenue. Heretofore the midsummer campaign has customarily resulted in fewer sales than the spring campaign, but with the added volume of sales secured this year through the unusual offer of free wiring it was found that the entire campaign was conducted without actual loss in spite of the $16,600 expense of wiring. In other words, a load of almost 800 electric ranges and water heaters, which will produce $50,000 per year increased revenue from kilowatt-hour sales, was added to the lines of the company without cost.

Some very interesting results were achieved in the district and salesmen competition. Every district made its quota while the best record was made by the Orofino district with 32 sales, making 457 per cent of its quota. Several outstanding individual records were chalked up and in all the company distributed $1,662 in cash prizes over and above the regular selling commissions. One hundred eighteen employees shared in this distribution.

Some 13,000 electric ranges are now in use among the company's approximately 48,000 residential customers, bringing the total range saturation on the system to about 27 per cent.



The Westinghouser

Published now and then by The Washington Water Power Co.

SUMMER RANGE CAMPAIGN BREAKS ALL RECORDS

System Reaches 160% of Quota — Every District Reaches Quota
Every Manager Earns Bonus

One of the most remarkable electric range campaigns ever staged closed August 16th with every District on our system over the top and all records busted to smithereens. 797 electric ranges (747 of them Westinghouse and 50 other makes) were sold during the period from June 16th to August 16th.

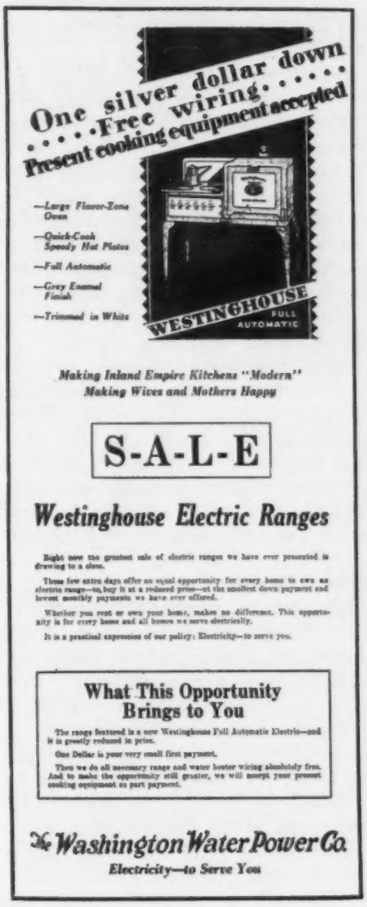
EXTRA

The sales by Districts are tabulated below and make interesting reading. Briefly summarized the campaign was as follows: The system quota of Westinghouse electric ranges was 467, almost equally divided between the suburban districts and Spokane. Of the 747 Westinghouse ranges sold, Spokane is credited with 258, or 109% of its quota, and the suburban districts with 489, or 213% of quota. Every District made its quota, with one District running as high as 457%! Every District Manager receives an award of $10.00 for making his District quota. All Districts except one are more than 25% over quota, thereby earning for the employees in those Districts an additional bonus of $3.00 for each Westinghouse electric range sold during the campaign. The Company is distributing $1662.00 in cash over and above regular selling commissions. 118 employees share in this big cash bonus.

JUNE 16—30 WESTINGHOUSE RANGE SALE AUGUST 16—30

DISTRICT	Westinghouse Quota	Westinghouse Sales	Total District Sales	Percentage of Quota Sold	Other Makes	Total Sales All Makes	DISTRICT
LEWISTON	46	61	61	117	9	72	LEWISTON
COEUR D'ALENE	26	31	31	127	3	34	COEUR D'ALENE
MOSCOW	23	39	48	229	1	40	MOSCOW
Genesee	—	0	—	—	—	0	Genesee
Troy	—	9	—	—	1	10	Troy
PULLMAN	17	28	48	282	1	29	PULLMAN
Palouse	—	3	—	—	—	3	Palouse
Uniontown	—	7	—	—	—	7	Uniontown
COLFAX	15	24	24	227	3	27	COLFAX
OKANOGAN	11	16	13	300	1	17	OKANOGAN
Omak	—	17	—	—	1	18	Omak
GRANGEVILLE	9	8	22	244	—	8	GRANGEVILLE
Craigmont	—	8	—	—	—	8	Craigmont
Nez Perce	—	6	—	—	—	6	Nez Perce
DAVENPORT	9	6	19	211	—	6	DAVENPORT
Reardan	—	3	—	—	—	3	Reardan
Harrington	—	8	—	—	—	8	Harrington
Odessa	—	6	—	—	—	6	Odessa
RITZVILLE	9	4	19	211	1	5	RITZVILLE
Lind	—	3	—	—	—	3	Lind
Sprague	—	12	—	—	—	12	Sprague
GARFIELD	9	7	16	178	—	7	GARFIELD
Rosalia	—	9	—	—	—	9	Rosalia
TEKOA	8	13	13	162	—	13	TEKOA
ST. MARIES	7	13	13	186	1	14	ST. MARIES
OROFINO	7	28	32	457	—	28	OROFINO
Kamiah	—	6	—	—	—	6	Kamiah
CHELAN	6	9	9	150	—	9	CHELAN

The last of a series of sales bulletins issued during any campaign of the company is pictured above. Below are sample advertisements used in the highly successful campaign which added $50,000 per year in increased revenue to company lines


One silver dollar down
Free wiring
Present cooking equipment accepted
—Large Flavor-Zone Oven
—Quick-Cook Speedy Hot Plates
—Full Automatic
—Grey Enamel Finish
—Trimmed in White
WESTINGHOUSE
FULL AUTOMATIC
Making Inland Empire Kitchens "Modern"
Making Wives and Mothers Happy
S-A-L-E
Westinghouse Electric Ranges
Right now the greatest sale of electric ranges we have ever presented is drawing to a close.
These few extra days offer an equal opportunity for every home to own an electric range—to buy it at a reduced price—at the smallest down payment and lowest monthly payments we have ever offered.
Whether you rent or own your home, makes no difference. This opportunity is for every home and all homes we serve electrically.
It is a practical expression of our policy: Electricity—to serve you.
What This Opportunity Brings to You
The range featured is a new Westinghouse Full Automatic Electric—and it is greatly reduced in price.
One Dollar is your very small first payment.
Then we do all necessary range and water heater wiring absolutely free. And to make the opportunity still greater, we will accept your present cooking equipment as part payment.
The Washington Water Power Co.
Electricity—to Serve You

Cook Electrically!
For Your Home
Whether You Own It or Rent It
Full Automatic Westinghouse Electric Range
FREE WIRING!
Present Cooking Equipment Accepted
No time to delay—orders should be placed now to secure the "reduced price," "free wiring," and wonderful "buying-terms" offered in this, our greatest sale of electric ranges.
Here Is What We Offer:
First, one silver dollar down brings this range to your home.
Next, we do all necessary range and water heater wiring free of cost to you.
Then we will accept your present cooking equipment as part payment on this new Westinghouse Electric.
Three sensational offers in one event, with additional advantages of a greatly reduced price and unselfish monthly buying terms we have ever presented. All these advantages yours if you place your order now.
$ ONE $ SILVER $1.00 DOWN $
July Special
Hotpoint Portable Electric Dinette Range
$6c Down—$1.50 Per Month
With Your Light Bill
$17.65
The Washington Water Power Co.
Electricity—to Serve You

Full Automatic
WESTINGHOUSE
Electric Range
one silver dollar down
free wiring
present cooking equipment accepted
Sale Is Drawing to a Close
Orders Should Be Placed "Now"
Westinghouse
Full Automatic Electric Range
Smart, new and modern—Westinghouse Full Automatic Electric range is being installed in hundreds of homes right now.
The home folks—in whom we are so greatly interested—should now enjoy the wonderful advantages that come to homes that cook electrically.
Whether you rent your home or own it—this sale is your opportunity.
—One silver dollar down.
—Free wiring, for range and water heater.
—Present cooking equipment accepted.
You will be as proud of this beautiful new Westinghouse Electric range—and we will be as happy to place it in your home. Don't delay—orders should be placed at once—right now.
Why!
—You'll Like This Range
—Beautifully designed.
—Grey enamel trimmed in white.
—Large "Flavor Zone" oven.
—"Quick-Cook" speedy hot plates.
—Full automatic.
—A new "range with the desk."
The Washington Water Power Co.
Electricity—to Serve You

Why Not

Make It an "Ensemble"?

By W. A. Cyr

MATRIMONY afflicts nearly everybody at some time or other in his or her life. In Hollywood it gets to be quite a habit. With most folks, though, it happens once, and they know when they've had enough.

Thus nearly everyone, even those without an operation or a trip to Europe to their names, still has something to talk about, if it is only married life—and a good deal too much has been said already.

Yet if there ever is a time in life when a couple needs a friend it is when they have said "I do" to the right questions. If ever two people ought to be let down easy on the reality of existing it is after the honeymoon is over and housekeeping starts. And if ever there was a more unprepared and ill fitted world to receive the young "love birds" it is this one.

At first it isn't so noticeable. Many young married couples start off, as it were, with community silver gift spoons in their mouths but very little to scoop up in them. Then, as the novels say after a row of asterisks like this:

* * * * * * * *

"In due course of events a little stranger came to them," you know, "out of the nowhere into the here," and all that sort of thing. Poetry to the contrary, then the fun begins.

The young couple who until this all absorbing event had been able to get along with almost nothing in the way of house or furnishings as long as they had some kind of an automobile to go places, suddenly finds that home is a very necessary sort of institution and something really ought to be done about it.

It is almost but not quite too late for Herpicide then. Like as not the couple has settled in one of those one-arm apartments where everything is furnished except comfort. In the country they probably live in an economical "couldja."* In either case there is space enough to display prominently the gaudy pink bridge lamp that Aunt Mamie gave for a wedding present and leave room for the cute waste basket from the girls at the office.

Somehow with the advent of a son and heir these things pall into insignificance. Nothing in the world would be as handy as a washing machine and a back porch big enough to put it on. Not to mention "a place to plug it in," alias convenience outlet. Then what is a washing machine without an ironer? Backbreak over an ironing board!

"If you have the washer," the young bride who suddenly discovers that she would rather have a new dress for baby than a box of chocolates, exclaims, "you really ought to do all the laundry. But to iron it all is just too much."

"Another thing needed is lots and lots of hot water," she reasons. "There is ever so much washing to do, so many baths to give, such housekeeping to be done, and hot water is half the battle. But in order to get a good rate to use a water heater, one really ought to have an electric range and some electric heaters—they are so much cleaner with baby around, and safer, too. Besides, the range would be so handy, with its automatic thing-amajigs, to get meals. You could get it all ready and set the buttons and go on and do all the other things without needing to stand over the stove and watch it.

"Speaking of food, with a baby," she will continue to envision, "wouldn't it be just perfect to own an electric refrigerator? It would be just the thing to keep all of baby's diet foods as they should be kept."

If it is a modern young woman who knows the cause and cure of rickets in children, she adds to her picture of the perfect home the possession of an ultra-violet lamp to continue the sun baths she gives junior on into the winter months.

All this may sound like the home and fireside magazine section of the Sunday newspaper, but it isn't meant that way. To anyone who has been through these circumstances of young married life they are grim realities. In many homes they actually become tragedies.

In fact one of the greatest tragedies of married life is the fact that when electrical appliances are needed the most they cannot be afforded, and when they can be afforded they are no longer badly needed.

To avert this tragedy there is one solution. The fact that it is also the solution of other problems, such as that of selling the entire quota of electrical appliances to the home, should commend it to serious consideration even if the electrical industry cannot visualize the tragedy just described. That solution is to sell all the appliances together at one time, as a group instead of singly and over a period of dragging years.

Sold one at a time, some will never be sold. Other wants and necessities will creep in to supersede the once single desire for the complete home equipment. New drapes have a way of becoming more important than the ironer after the baby has become a young child. If the home has managed to get along without a range or water heater during the critical years when they were needed so much more than now, it can get along without them still longer.

In other words, the time of critical, desperate need—and what better ally of the electrical merchant than this?—slips by and other calls for the expenditure of the well known "consumer's dollar" sing sweeter to the ears.

A number of practical obstacles immediately present themselves to the electrical merchant, be he central station sales manager, contractor dealer or other dealer.

To reach this universal young couple at this critical, susceptible time of their lives, the down payment must be small. Few have much cash on hand to place down on an electrical home equipment after the hospital and doctor bills have been cared for. The continuing payments likewise must be small, even if spread over several years.

* "Couldja," n. (American) derived from prematital "Could ja live in a house like that and still love me?"

The home owner may now get his bathroom in a colored ensemble on easy terms

Lovely Bathrooms May Be Built At Little Expense, Plumber Says

A lovely bathroom need not be expensive, according to Joseph Ahlbach of Ahlbach & Meyer, plumbing contractors, who cites a bathroom which his firm has just remodeled as an example.

"We were called in by the owner, Hiller," Ahlbach stated, "to consult with the tile contractor in working out a bathroom ensemble having perfect fitness to purpose and fine decorative detail. The owner wanted a modern bathroom in color to replace their old white one and the completed job costing $1000 gave them as beautiful a modern bathroom as one could desire.

"A color scheme of Du Barry rose and black was selected with the floor and walls fully tiled in rose with black insets. Ceiling and door are enameled in a harmonizing rose, while the vitreous china recess tub, the pedestal lavatory and the TN noiseless water closet are also 'n rose. A tub shower and all exposed plumbing fixtures are chrome plated, while the faucets have black china handles. A triple mirror, concealed medicine cabinet and rose rubberized silk window and shower curtains complete the ensemble.

"In this instance the finest of tiles and plumbing fixtures were selected and the plumbing bill did not run over $500. It might even have been considerably less with other fixtures and yet effective. When one considers that these improvements can be paid for over eighteen months on a budget basis, improve the property value and closely concern the family's health and happiness, they are not expensive."

In order to assume such a risk on a thousand to fifteen hundred dollars' worth of merchandise, the merchant should require guaranties of stability of everything from the husband's job and place of employment to the marital vows. The duration of the union wants to be predictable in terms of scores of years instead of modern jazz-age months, even though the latter may seem longer. Might it not be something of an insurance, an auspicious start which will bring greater chances for success to the domestic life of the newlyweds?

The plan must be flexible. Some families will require a certain group of appliances and other families another. If the wedding gifts included a vacuum cleaner, for example, any plan which was rigid in the particular appliances included in it might threaten to load the couple with a second cleaner and be turned down for no other reason. The best plan is that worked out by the British Columbia Electric Railway Company, in which the major appliances are listed as Class A appliances, and the others as Class B. To enter into the "Electric Home Contract" with this company the customer must take any two or more of the Class A group.

In that company plan a minimum of $500 on a contract is necessary for the group appliance terms. Typical contracts are arranged on the following terms:

Method of Payment		Total cost over three years
$500 Contract—		
Down payment	$25.00	
36 monthly payments of	14.90	$ 561.40
$750 Contract—		
Down payment	$37.50	
36 monthly payments of	22.40	$ 840.30
$1,000 Contract—		
Down payment	$50.00	
36 monthly payments of	39.70	$1,119.20
$1,500 Contract—		
Down payment	$75.00	
36 monthly payments of	44.60	$1,680.60

In other words, whatever the group of appliances chosen, provided at least two of the Class A group are included, the down payment is based on 5 per cent of the total contract price. The payments over the three years are calculated upon the balance, plus interest or carrying charges, divided by 36 monthly payments. To simplify the matter for the salesmen of the B. C. Electric the company has worked out a factor, 3.126, by which the balance of the contract after the down payment has been deducted, can be multiplied to give the amount of the monthly payments. And to add to the conjugal bliss the usual amount of range and water heater wiring may be included in the contract, providing it is approved by the company before being signed by the customer. When this is done a lien form is used.

While nothing like a landslide to home electrification has resulted from this company's plan, a growing number of complete contracts has been sold. Surprisingly large has been the proportion of the contracts which have been paid for in cash, which is just another way of saying that the electrical industry has been overlooking something in its sales methods in not offering the complete home equipment in one lump sum long before this.

In fact one contractor-dealer in the B. C. Electric territory has been able to keep ahead of power company competition only by means of the complete electrification job, including wiring, appliances, fixtures and garage lighting, "all for the sum of so many dollars, set up, tested, guaranteed and ready for you to press the buttons," as he winds up his sales talk, flourishing the fountain pen and contract at the right moment and carrying away a properly treated dotted line.

To anyone who may still be scratching his head and wondering if it can be done, not to mention the homes of our young married folks saved to posterity, it is only necessary to point to the clipping from a recent newspaper, reproduced on this page. Du Barry rose and black bathrooms, with fully tiled walls and black insets, enameled doors, pink plumbing, chrome faucets with black handles (which ought to be handy where there are children in the family), a triple-mirror medicine cabinet, even the curtains thrown in, can now be obtained in an ensemble for $1,000, and on easy payments.

There are ensembles of everything nowadays. The cloak, suit and dancing pump industry isn't satisfied if it sells our wives less than a complete wardrobe in a "predominating color," with three pairs of shoes for different attitudes of mind, and hose, earrings, lipstick and perfume have to be matched. It is hard for an ordinary male to appreciate just how this so-called matching is accomplished, but let him never attempt to argue the point. On the other hand, there is some sense to the ensemble of matched clubs, and of course to the ensemble of zigzag socks, super-sport shoes, matched sweater (zigzag like the socks) and Bavarian *beret* that makes up the swanky costume, be it for maximum or only minimum golfing.

The automobile men want to sell you an ensemble of motors—one to match each necktie or color of dress, and a Baby Buggy to ride in to work, school or play. For the technicolor kitchen of today there are ensembles of ochre yellow, Nile green, or Deauville pink pots, pans and paring knives. Parlor furniture used to come in suites, but suites are ensembles now.

In view of all this ensembling, the path for the electrical industry is all too plain. Now is the time for all good electrical men to come to the aid of the ensemble. Let our appliance manufacturers sick their smocked "stylists" on the problem. Let them art us up some irresistible combinations—pardon us, ensembles—of cooking machines (they used to be ranges), refrigerators, complete home laundries (washers and ironers, you know) and throw in for garnishing a few automatic waffle molds, toasterenes, telechrons and marcelle foundries (hair curlers, folks). Let us paint them Paradise blue or sunstroke yellow if need be, fit them up with chrome push buttons and black china feet, and invisible cords,—

But let's go ensemble!

"Don't Be a Single Shotter"

By Studying the Seasonal Flow of Appliance Sales Any Dealer Can Ride the Crest of the Waves to Bigger Volume Without Adding to Overhead

"ANY DEALER can do from 25 to 40 per cent more electric appliance business than he now does without adding to his overhead expense." Thus H. H. "Kelly" Courtright counsels the dealers in the San Joaquin Valley and midland counties coast territory of California who co-operate with his own Valley Electric Supply Company of Fresno in merchandise campaigns. But his message to his co-operating dealers is one for all dealers everywhere. It is a message to dealers no matter what the particular sales set-up of the central station may be. It is merely good common sense speaking.

From his own experience in analyzing merchandising problems and watching factors which affect sales under a wide variety of local conditions, Mr. Courtright has been able to derive methods and a reasoning which will help any dealer with his own problems.

It does not take much study of his costs on the part of the dealer, Mr. Courtright points out, to make a chart of the reactions to his own selling efforts. All appliances, for instance, carry approximately the same discount—from 30 to 40 per cent. By putting down the amount of appliance business done per month and taking an average of 35 or 40 per cent as his margin, the dealer can set this up in the form of a chart which will indicate to him how much business comes to him naturally at certain periods of the year.

Likewise if the dealer will watch the results he gets in sales after a modest advertising effort, in other words what it does to his chart to do a little advertising, he can soon find a rather definite result from certain kinds of advertising. With this information noted down he can guide himself on the next advertising effort.

It will soon be evident to him what appliances sell well at certain seasons. Then he can, with this information, plan to boost these at such times. A little effort then will bring more sales for the given amount of expense, in other words, without extra overhead.

In his advertising the dealer need not be ashamed to imitate brazenly the kind of advertising he sees the big concerns, the manufacturers and the power companies doing. It need not be anywhere near the same scale, but it can use their expressions, slogans or ideas. After all, what he sells helps them.

Experience has shown all good merchants, Mr. Courtright points out, that a certain flow in sales comes at certain repeated times of the year. By riding the wave of this flow the merchant can cash in on the advertising and promotion which is done by the other branches of the industry at such times. With a small supply of the mail stuffers which the manufacturers all supply, mailed out to friends, acquaintances and business customers of various kinds, the dealer can attract much of this business generated by the industry at large to himself.

This effort need not be great and it is not expensive. *But it should be persistent.*

Action Windows

Along with such a mailing of advertising stuffers or broadsides the really wise dealer will stage something in front of his store or in his window to attract attention.

An example of this was the successful stunt of one dealer in Mr. Courtright's "chain" of co-operating dealers in a San Joaquin Valley town. The dealer had sent out a number of mail broadsides on a refrigerator. He added punch to the thing by placing a refrigerator in his store doorway and having a hose pouring water over it and trickling over the sidewalk to the street all day long. It was soon the talk of the town and he sold several refrigerators by making the most of this advertising.

The dealer who can thus catch an idea and put it to work, even in a simple way, can dispose of enough of the larger appliances to keep up a fair gross volume and lower his proportionate overhead.

The Flow Curve

Experience has taught that seasons play a very important part in sales appeal. From September, for example, on up to the end of December is the best time for radio. Most dealers realize this. Then is the time, according to Mr. Courtright, that the dealer should bear heavily on radio. The selling curve on radio starts down in January and February.

Any dealer can chart out simply and quickly, his own past sales experience. Such a chart acts as a business map, shows him when to hit the rise of the wave, when to start work on the up wave of the next seasonal appliance.

From March to September is refrigeration time. Thus the radio can be balanced up by the refrigerator. And to iron out that slump between the two, Mr. Courtright points out that most power companies conduct range campaigns about twice a year, usually around April and October. This is just about the time when they can best iron out this same selling dip.

Instead of sitting back and "deploring" and "protesting" the central station's merchandising campaign, Mr. Courtright advises the dealer to ride with it. He advises this whether the central station sells in active competition with him or not. The added interest created by the advertising of the power company, he feels, can and often is capitalized by a live dealer to his own profit. The dealer can sell in many instances where the central station salesmen fall down for any of a number of reasons.

If a dealer has a salesman, or if he is his own sales

force, let him always talk his other appliances even when he is concentrating on a particular one. If he calls to see a family to sell or demonstrate a radio, he can tell about the refrigerator he carries, the range, the heaters, the new lines of egg cookers or the latest model automatic toaster. If he is enthusiastic about them he arouses enthusiasm and interest. When the time comes to buy such an appliance his former words will often bring him the customer.

"While you are there," says Mr. Courtright, "it doesn't cost you a thing to talk all of your many lines. Don't be a 'single shotter.' Have a whole bagful of other samples, so to speak.

"The good salesman always—

"1. Talks the appliance in season.

"2. Next talks the appliance which will be next in season.

"3. Calls on all the present users of the appliances he has sold. If he has sold good merchandise he can always feel proud to return to his former customers. And the customer likes it. It makes him feel that the salesman is taking a personal interest in making the appliance give the best service."

With the group appliance idea being discussed so much these days in central station conferences, the dealer who is alive to things can get a head start on all the central stations by promoting and selling this idea. He may not be successful at first, but he will be building himself up in the community. He might as well be the one to develop this really fine idea. In fact, some dealers have been selling the group appliance idea for years. They not only include in it the major appliances but with them they make a complete job of it by selling a good wiring job, fixtures and even yard lighting.

No central station is in position to give so complete a service as this.

At San Luis Obispo is a contractor-dealer who takes advantage of the flow curve described by Mr. Courtright. The Cline Electric Shop last year did $4,500 in refrigerator business. Mr. Cline established the new display room shown at the right, and in an adjoining room kept a display of the ice boxes taken in. He sold every one of the ice boxes and considers each purchaser a future electric refrigerator prospect whom he intends to follow up regularly

Glassed-in showcases have given way to open shelves and tables in the Cline Electric Shop. This allows the visitor to the store to examine the appliances freely. Mr. Cline features special campaign appliances in season, sells radio to balance refrigeration sales, makes appliance sales lead to wiring, and uses every wiring job to sell a range and water heater. A motor shop, where motors are rented, repaired, or rewound, and an unusually well developed appliance and housewiring repair system round out the Cline versatility, which means good volume and profit

Some of the earlier advertisements used, all stressing the fun of radio ownership

Selling Radio Enjoyment

Programs Are What Make a Radio, This Company Found When It Changed Its Advertising and Brought in More Sales

CANADA produces other things besides red-coated cops that "get their men," icicles, and the name for a ginger ale.

In point, a series of radio advertisements of the British Columbia Electric Railway Company, now running in local dailies in Vancouver, utilizes reverse English to set up a jingling symphony in the cash registers of the company's radio department.

"B. C. Electric Stores," with ten retail outlets in British Columbia, lead the province in radio sales, and aggressiveness has been replaced by an easy going take-it-or-leave-it tenor where retail radio advertising is concerned.

Until comparatively recently, the B. C. Electric's efforts along the line of radio retailing, were not dissimilar to those methods in general use.

Store inquiries were followed up by calls at the homes of prospects. A strongly organized door-to-door crew worked cold canvasses, and even on the sales floor considerable pressure was brought to bear.

The company's advertising, at that time, was of the would-be forceful, high-pressure species, rich in superlatives and extravagant statements. In other words, the kind of advertising that is even now, for the most part, identified with radio marketing on a retail basis.

Such advertising did not match up with the B. C. Electric's policy of soft-toned, confidence-inspiring copy.

The company's merchandise advertising department was faced with the problem of easing up, thereby giving competitive dealers an advantage, or of entirely changing—in fact, evolving a new form of retail radio advertising. Its decision was in favor of a somewhat different form of advertising approach, and while doubtless unorthodox in many ways, the new advertising has brought definitely satisfactory results.

The Vancouver company decided to sell entertainment rather than radio sets. It merely pointed out that owning a radio was lots of fun. In each advertisement of the series, an outstanding broadcast feature was presented. Early in the series a piece of copy pictured a somewhat impractical looking lion being subdued by a lion tamer.

"Down, Gilmore, Down!" was the heading—and, "A Lot of People Call This Radio's Greatest Laugh."

The illustrations were humorous and interest-compelling. The copy man apparently enjoyed doing his job.

Gone is the "Stupendous Bargain Offer" type of heading. The job of proclaiming the advantages of a specific make of receiving set is left to the manufacturer.

Instead, this somewhat unique advertising leaves a definite impression that the world of radio is a world worth venturing into, and in comparatively insignificant space a radio set is illustrated, and its price quoted. If superlatives remain in the copy they are of a far different nature. For instance this, speaking of the large-sized Paul Whiteman and his dance music:

"He's the biggest man in contemporary dance music . . . a veritable mountain of rythm . . . a baton wielder who carries extraordinary weight in the entertainment world."

According to Frederick Beck, who writes merchandise advertising copy for the B. C. Electric Railway Company, the campaign is a "double-header in its effect."

"It is gaged to arouse curiosity and interest in the non-radio owner," says Mr. Beck, "and because in the later advertisements of the series we give a column of 'recommendations for tonight's listening in,' the series is followed by radio owners. (The local papers do not feature radio broadcast news.) A survey showed us that the great majority of sets in this market are of a quality and a vintage making their owners prospects for newer and better receiving sets. We're attempting to reach both types of prospects: owners of out-of-date sets—and those yet to be inflicted."

Thus, by regularly throwing the spotlight on what's going on on the air, the B. C. Electric Railway Company has succeeded in establishing its retail stores as the logical place to buy radio—and increased sales, in the radio division, indicate that the departure from the usual form of radio retail publicity was a step in the right direction.

If you have to strain to see . . . LOOK OUT!
What the Doctors Say . . . about Eyestrain and Lighting
What about the Lighting Question in YOUR home?
Give Young Eyes a chance . . .
Squints and Wrinkles
. . one result of poor lighting
Convenience Outlets are Service Inlets
. . . have plenty in your home
Maybe Good Lighting's The Medicine You Need
An Empty Lamp Socket Did This . .
Los Angeles Gas and Electric Corporation

Eyesight and Convenience

EMPHASIZING both the desirability of having plenty of convenience outlets and the dangers of improper or insufficient lighting, the Los Angeles Gas and Electric Corporation's advertising in this load-building campaign was strikingly successful. Besides selling more lamps, and better lighting generally, the advertisements created work for contractors who installed many outlets throughout the city.

This littl girl is holding a "Mazda Mansion," unique doll-house lamp carton which helped sell 102,000 lamps in 30 days in Colorado

Each Central Station Has Its Own Method, as Those Reviewed Here Indicate, of Bringing Lamps to the Consumer's Attention. Even Those Who Do Not Merchandise Remind Customers of the Need for Spare Lamps and Sell Them Cartons to Take Home

Filling Empty Sockets

"THERE goes the light! Strike a match while I get the one from the kitchen. Do you know, I don't think these lights are as good as they used to be. This one has been in the front room for only two years."

Everyone carries a spare tire on his automobile; extra fuses are generally kept on hand in case one blows out; many people are supplied with extra spectacles; almost every home is equipped with duplicates of essentials. But how many homes or business houses make a practice of keeping a supply of extra lamps? Usually, there is but one lamp where two or three should be, causing strained eyesight from trying to see in the gloom, lost efficiency, and, incidentally, decreased power company revenue.

What is to be done when the housewife replaces a burned-out lamp by robbing some other socket? When scarcely a home or place of business is completely lamped, how is the power company to meet this loss in revenue?

"Why, start a campaign," answer the merchandisers.

But it isn't the campaign, say commercial managers of Western companies who have met and beaten this bugaboo. It's the method.

In Colorado

The Public Service Company of Colorado, in solving its problem, sold 102,000 Mazda lamps in 30 days and, just incidentally, added a calculated 5,866 kw. to its load, roughly valued at $130,000 a year.

To do this, the company embarked upon an extensive advertising campaign. Newspapers carried the slogan, "How are you fixed for lamps?" Pedestrians and motorists saw the slogan on truck banners and window displays. Every customer was greeted with the question. Even the meter readers became salesmen in their house-to-house work. E. M. Rowland, commercial manager of the company, was certain that Colorado had become "lamp conscious" when metermen came in at night with orders for 40 or 50 cartons.

Children contributed to the success of the campaign when they discovered that lamps were being packed, not in regular boxes, but in "Mazda Mansions," doll house cartons. Fathers and mothers were literally coerced by the children into buying one or more of the six-lamp cartons just for the doll houses they provided.

For the sale, every employee was a salesman, earning special commissions.

In San Diego

Home lighting is the most profitable source of central station revenue, officials of the San Diego Consolidated Gas & Electric Corporation have learned, but its full yield cannot be realized as long as some of the residential sockets remain lampless and unproductive. So employees of the company sold 1,000 lamps a day for 31 days during October last year, adding a calculated load of 1,618 kw. The campaign has now been made annual and will be repeated in October of this year.

No merchandising department effort is this campaign, Ross Campbell, of the sales department, explains. It is an organized, competitive company contest: Team captains are selected from each department and detailed by the department head to organize and maintain a selling force. Every employee is given a straight 15 per cent commission on all sales with an extra bonus of 5 cents per carton if delivery is made by the employee. Deliveries have been cut in half by this offer. Cash prizes totaling $100 are posted for the ten employees selling the most lamps in money value. In addition, a discount of 30 per cent is allowed on personal lamp purchases by employees.

Advertisements in San Diego papers directed the customer to the company offices, to dealers, and to the employees. Other advertisements offered free lamp shades made from the cartons with each kit of six lamps. To protect employees against misrepresentation, special identification cards were issued.

Investigation proved to the Arizona Edison Company that the best place for a lamp display rack was in front of the door

Interest was maintained among the salesmen by score boards placed in central locations. Each board was shaped to represent an electric bulb, the outer side of which was a clock dial with numbers starting at 5,000 and ending at 30,000, the quota for the campaign. This kept the workers informed as to the progress of the campaign. Names of employees selling 100 or more lamps were printed on the stem of the lamp as an honor roll, supplemented later by a roll of those whose sales had passed the 500 mark.

In Arizona and Elsewhere

Even where no campaign is in progress there is a great deal to the problem of placing the sales stand in show rooms, as the Arizona Edison Company found out recently. To determine the best location, displays in some of its offices were placed against rear walls where customers passed to pay bills. In others, the display was placed in a conspicuous place on one side of the room. Other stores set it directly inside the door, where the customer must walk around it in entering. Records were then kept.

The stand at the side sold more than the one in the rear, but the one at the door sold markedly more than either of the others. Now, in all Arizona Edison stores, the lamp counter must first be passed by the customer who wishes to get elsewhere in the store.

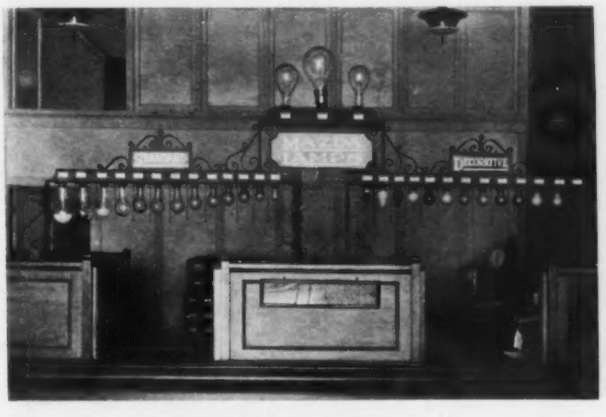
The Los Angeles Gas and Electric Corporation does not merchandise any appliance, either gas or electric, but it has found it good business to "keep those empty sockets filled."

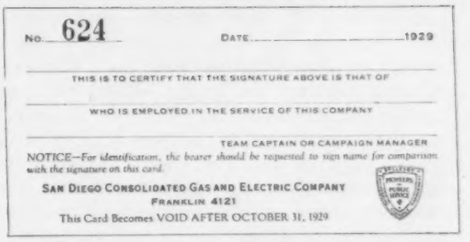
In each of its eight branch offices in Los Angeles proper, a lamp display rack is given a prominent place. Each lamp is labeled and priced and so installed that either the customer or the clerk can turn it on or off. This arouses interest and tends to hold the customer's attention while the bill is receipted and change made. A 60-watt lamp at the same price as a 25-watt usually results in the sale of the larger lamp.

Applications for new service or moving orders naturally suggest empty sockets to the clerk, who in turn suggests lamps. A customer in good standing can charge lamps and be billed on his next monthly statement. If desired, the corporation appliance truck will deliver the lamps and either bill them or accept payment. This truck also carries a complete lamp display.

No doubt these clever merchandising methods may be used to advantage by any company during the Add-a-Light campaign which the Mazda lamp companies are sponsoring during this month and next.

This lamp rack, above cashier's desk in district offices of Los Angeles Gas and Electric Corporation, reminds consumers to keep the empty sockets filled




No. 624 DATE 1929

THIS IS TO CERTIFY THAT THE SIGNATURE ABOVE IS THAT OF

WHO IS EMPLOYED IN THE SERVICE OF THIS COMPANY

TEAM CAPTAIN OR CAMPAIGN MANAGER

NOTICE—For identification, the bearer should be requested to sign name for comparison with the signature on this card.

SAN DIEGO CONSOLIDATED GAS AND ELECTRIC COMPANY
FRANKLIN 4121

This Card Becomes VOID AFTER OCTOBER 31, 1929

Employees sell lamps during the annual campaign of the San Diego Consolidated Gas & Electric Company. At the top is a barometer showing progress of the campaign. Center, an identification card given employees to prevent misrepresentation

Right, one of the advertisements used by the company in an extensive advertising campaign

BUY
WHEN LIGHTS BURN OUT
and they do occasionally, you'll experience a high degree of self satisfaction in replacing the lamp from your emergency carton.
Every wise family prepares for the unexpected guest.
Why not prepare for the unexpected darkness?
Buy the new type
Inside Frosted Mazda Lamp
6 in a Carton
MAZDA
LAMPS
On Sale at Your Nearest Electric Dealer
or one of our "Electrical Happiness Stores"
San Diego Consolidated Gas & Electric Co.

Selling the Wide Open Spaces

Combined Companies Solve the Difficulties Inherent in Serving Many Small Communities of Sparse Population Remote From Each Other Yet Spread Over a Quarter of the United States

TO A UTILITY company serving small towns in an area predominantly agricultural and having little industrial possibility, the building of domestic load takes on an importance somewhat greater than it does to the utility company serving the larger cities, with greater opportunities for development of larger industrial loads. The fact that the territory served by the Mountain States Power Company and The California Oregon Power Company is preponderantly of the residential character, is the fundamental reason for the application of intensive effort on the part of these companies to build load through merchandising.

The year 1926-28 were years of experimentation on the properties of the Mountain States Power Company in the development of the best plan for building this domestic load through merchandising. One of the principal problems involved was the widely scattered nature of the territory served, imposing considerable difficulty in exercising the necessary supervision over the sales force. The combining of the properties of The California Oregon Power Company with those of the Mountain States Power Company under one management in 1929 further complicated this problem. It is thought now, however, that this problem of supervision has been fairly adequately solved and that reasonably satisfactory results are being attained. The solution of the problem has been found in minute and careful planning and in developing an organization to function in a manner as nearly machine-like as possible. Such an organization has been developed by Glenn L. Jackson, general sales manager for the combined companies.

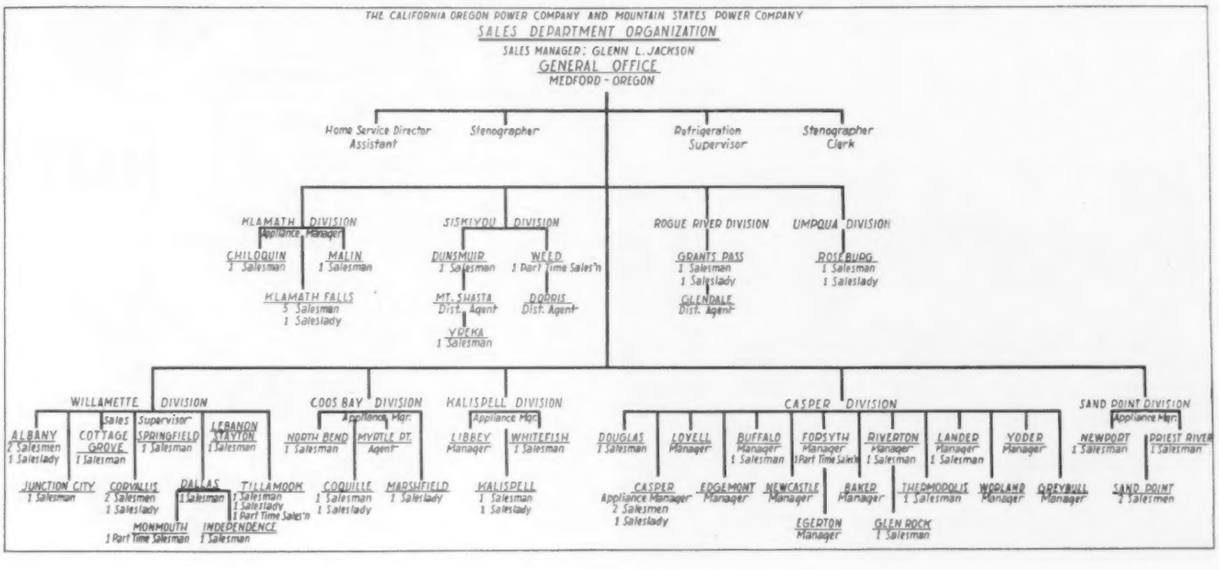
To give an idea of the scattered nature of the properties served by the two companies, it should be stated that The California Oregon Power Company serves 53 towns grouped into four divisions, one of which is in northern California and three in southern Oregon. The Mountain States Power Company serves 106 towns in Oregon, Washington, Idaho, Montana, South Dakota, and Wyoming, in five divisions. The combined companies have approximately 40,000 residential customers in the areas covered by the merchandising department. District offices and company stores are maintained in 31 towns among those served by both companies. The task of visiting each separate property where a sales unit is maintained, requires a trip of six weeks' duration covering nearly 6,000 miles.

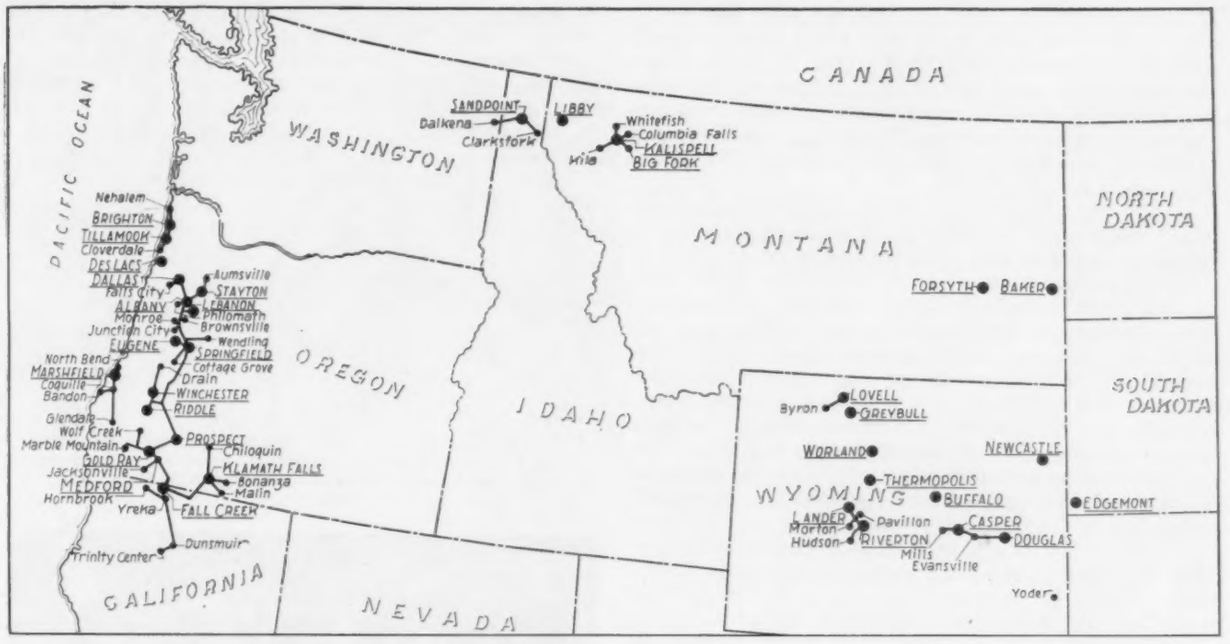
Establishing Quotas

The basis of the merchandising plan is the quota set up for the year's operations. This is found by totaling the quotas for each district, which have been arrived at by estimating how many of each appliance should be sold in the district, after a careful consideration of the local conditions having a bearing on the buying power in that district. Operating records, local sales history, financial conditions, crop conditions, bank reports, the attitude of the local populace toward electrical appliances, and the electric rates applying in the different districts constitute the major factors considered in assigning district quotas. The total number of the various appliances assigned to each district is then broken down into the number that should be sold each month.

As examples of district quotas set and actual sales made, these figures are given in the following table for three districts typical of large, medium, and small dis-

Organization of the sales force has been intensified because of the impossibility of close, personal observation by the sales manager. The chart shows the nine divisions with the personnel of each





Map of the properties served by the two companies. The widely scattered character of the territory, except in certain districts on the Pacific Coast, may be appreciated

tricts of the companies, covering the period from July 1, 1929, to June 30, 1930.

	Klamath Falls Ore.		Kalispell Mont.		Graybull Wyo.	
	Quota	Sales	Quota	Sales	Quota	Sales
Ironing machines	100	73	38	22	9	8
Radios	117	134	30	73	13	24
Ranges	270	291	89	107	0	0
Refrigerators	143	168	52	44	19	22
Vacuum cleaners	155	121	59	68	10	23
Washing machines	263	306	82	119	20	30

The 1930 quota for the entire systems of both companies is as follows:

Ironing machines	622
Radios	1,243
Ranges	1,634
Refrigerators	1,488
Vacuum cleaners	991
Washing machines	2,305

The sale of these appliances will gross approximately $1,200,000, and present indications are that this quota will be reached in spite of adverse economic conditions obtaining in recent months.

The establishment of the quota is the crux of the entire plan. It represents, in the best judgment of the management, the reasonable volume of business to be expected, and the sales organization is built up on the premise that this volume should be secured, and that, if it is secured, it will yield a satisfactory year's growth. Once established, these figures are rigidly adhered to. To indicate how closely the quota is figured, and how closely the plans are carried out, it should be stated that the 1929 sales in the Mountain States Company territory equaled 99 per cent of that company's quota. The California Oregon Company did not operate on a quota basis for the full year. Total sales for the year in both companies amounted to $1,049,000, an average of more than $26 per residential customer served by the merchandising department's operations.

Sales Organization

The second step in the development of the merchandising program, Mr. Jackson decided, was to build up a sales organization capable of doing the job laid out. In one of the accompanying illustrations the organization plan may be noted. Full-time salesmen are placed in each community having sufficient customers to warrant it, and in some of the larger communities there may be several such full-time salesmen. In a few of the very small communities the sales work is accomplished by the regular operating force in connection with the ordinary operating duties, and in some instances part-time salesmen are employed. Every sales person is expected to to sell the complete line.

Each division constitutes a complete sales unit operating under the general supervision of the headquarters office in Medford, Ore., through a head salesman or appliance manager, who acts as the sales supervisor of that division. The only exception to this is found in the Casper (Wyo.) division where long distances and inadequate transportation make it inexpedient to maintain a sales supervisor. Each separate sales unit in the division works directly under the supervision of Mr. Jackson at Medford.

In a few of the larger towns, doing an annual business of $40,000 or more, sales girls, whose duty it is to remain in the store and contact each customer who comes into the office for any purpose whatever, have been added within the past year. These girls pass out sales literature and recipes, and in general attempt to interest the visitor in the purchase of some electrical appliance. Like the outside salesmen, these girls have definite sales quotas so that they must produce business as well as make contacts and develop prospects. The idea behind the addition of these girls to the sales staff was to capitalize fully upon the sales opportunities represented by well displayed merchandise. Prior to this year the store sales averaged 5 per cent of the total, and it is expected that the activities of the girls in the stores will increase this percentage.

Supervision

Quite obviously, successful functioning in such a far-flung organization depends largely on the supervision

maintained over it. The fact that the sales manager is able to visit his sales units only three times annually made it necessary to establish a system of checks on the salesmen which would permit the manager and the salesman himself to know exactly how the individual was performing from week to week. The strength in the system of control exercised by the sales manager lies in the direct quota plan.

Under this plan, each salesman has a definite quota to sell monthly and is held to strict accountability for the volume assigned to him. This volume has been placed at about an annual average of $2,500 per month per man, which has been found to be fairly equitable. The salesman wires weekly sales reports to the main office, and each month his sales are verified by back check. From these records, Mr. Jackson initiates at least one personal letter a month to each sales person in the entire organization, and through this system, in addition to what personal visits he can make, a close personal contact is maintained with the work of each individual. Thus, in the operation of the merchandising plan, each individual in the organization has a definite and predetermined part to play. Each knows his own part and each knows that every other salesman in the organization is on an equivalent basis. There is, therefore, no chance to "fudge" or "alibi" or hide behind general division averages.

When the salesmen are hired, they are fully informed of what is expected of them, and told that they are on 60-day trial. This trial system tends to expedite the development of a satisfactory organization through weeding out the non-producers promptly and is equally fair to the worker, since it eliminates the person unsuited to this class of work and permits him to seek a class of work for which he is better fitted.

A part of the plan contemplates that a minimum of office work shall be required of the field staff. Wherever such work becomes burdensome to the salesmen, an office girl or clerk is given the task of keeping the sales records.

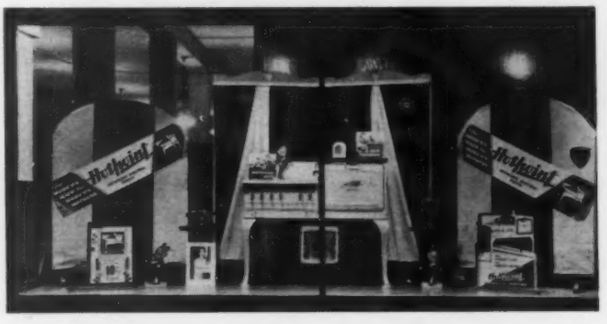
Besides the personal letters sent monthly to the individual salesmen, a general weekly sales letter is sent out from the sales manager's office. In such a letter the general results in the merchandising program are given, and stimulus and inspiration are provided. When campaigns on a certain appliance are planned, a very complete outline of the operation of the campaign is sent to each salesman with a postcard which must be signed and returned so that there can be no chance of any individual not receiving the information.

Annual campaign chart showing sales of appliances by months and seasons. These charts promote a better regulated sales program among the salesmen

TENTATIVE CAMPAIGN PROGRAM - 1930

	Major	Minor	Others
January	EASY WASHERS	WESTINGHOUSE HEATING PADS; THOR HEALTH LAMP	CLEARANCE SALE RANGES WASHERS RADIO
February	EASY WASHERS	WESTINGHOUSE WAFFLE IRONS AND BATTER JUGS; THOR HEALTH LAMP	
March		HOTPOINT TOASTERS	RANGE SURVEY COAST DISTRICTS; REFRIGERATOR ADVERTISING CASPER DIVISION
April	SIMPLEX IRONETTE	HOTPOINT PERCOLATOR AND DISH SET	
May	RANGE	COOKERS	
June		HOTPLATE COOKERS	
July	REFRIGERATOR	FANS	HOME SERVICE DEMONSTRATION PROGRAM TO ALL
August	RANGE AND REFRIGERATOR		RANGE USERS
September	RANGE AND REFRIGERATOR CLEAN UP; RADIO	LAMP CAMPAIGN	
October	THOR WASHER AND IRONER	WESIX HEATERS	TELECHRON
November	RADIO	SMALL APPLIANCES PERCOLATOR TOASTER ETC.	HEALTH LAMPS
December	GENERAL RADIO WASHER RANGE REFRIGERATOR IRONERS	SMALL APPLIANCES; HEALTH LAMPS	TELECHRON

Well dressed windows help merchandising in small towns where branch offices are maintained. Store and window appeal have helped make the territory highly saturated with ranges

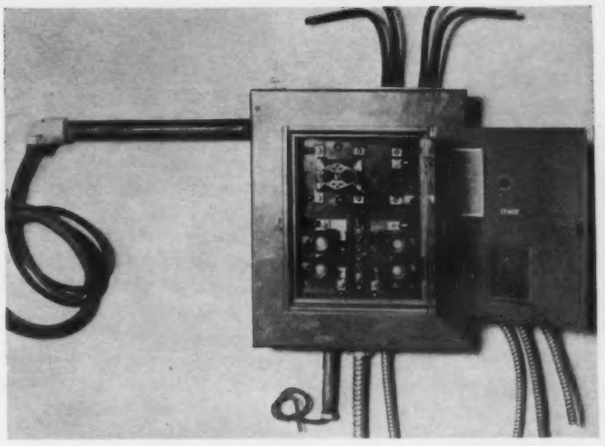


Sales schools are held periodically for all the salesmen. These schools are primarily to familiarize the sales forces with the equipment they are selling, and consequently, cooking, washing, ironing, and other household activities are taught. A need has been felt for additional instruction in salesmanship beyond that effected under the present system of supervision, and because the widely scattered territory does not permit the holding of central schools, it is planned to provide a correspondence course from some recognized authority. Another method of educating salesmen has been occasionally to send out through the territory from the home office, specialists on washing machines and vacuum cleaners to assist the field force with its sales problems.

The kind of appliances sold is thoroughly standardized throughout the territory of both companies. The determination of what manufacturers' products are to be sold is a function of the sales manager, and a stock sheet showing how many of each appliance should be on hand in each store is sent out periodically from the home office. District sales representatives, however, are made responsible for having a sufficient quantity of goods on hand and for avoiding the accumulation of a surplus.

The careful working out of the details of this general plan of supervision has resulted in a machine-like functioning of the organization which has been a large factor in its success.

As has been stated, several campaigns are conducted during the year on different appliances as an aid to the salesmen in reaching their quotas. These campaigns are timed to that season of the year in which the appliances



This portable range wiring equipment helps sell ranges to renters who are loath to install permanent equipment in a house not their own. It contains a 60-amp. switch with blocks for two lighting circuits, one range, and one water heater circuit. Flexible conduit, No. 8 wires, and No. 2 cable are used. It is installed for $35 and may be returned for a $30 credit

featured are most easily sold, but this does not mean that the only time such appliances are sold is during the campaign period. It simply means that some additional effort is put forth in the campaign period with extra advertising. One of the accompanying illustrations shows what campaigns were scheduled for 1930 and when these were to take place.

Campaign quotas in each district are automatically set up for they consist of the district's quota to the end of the campaign less the sales made up to the beginning of the campaign. Thus, if one district has sold more than its quota at the beginning of the campaign, its campaign quota is relatively small and *vice versa*. Salesmen's campaign quotas are found in identically the same way.

An example of a typical campaign was that upon Hotpoint ranges which ran from May 1 to July 1, 1930. The complete outline of the set-up was issued from the home office on April 12. Exact prices on various models of Hotpoint ranges covering both cash and term prices, installed or not installed, and covering also the substitutions of cookers for top elements were listed. The exact basis on which trade-ins on fuel ranges could be made was also set up. Sample newspaper, outdoor board, and direct-mail advertising was shown. Prizes, trophies, special vacation trips, and extra compensation for the salesmen were offered based on the percentage of the salesman's campaign quota sold during the period.

Compensation

All sales persons are compensated on the basis of flat pay plus bonuses depending upon sales made. The field men are paid $150 monthly and have the opportunity of earning bonuses ranging from a minimum of ¾ of 1 per cent of their gross sales to a maximum of 3 per cent, depending upon the conditions in the particular area in which they operate. In districts where there is a head salesman responsible in part for supervision over the other salesmen of the unit, this compensation plan is modified to the extent that an additional bonus on the entire district sales is paid to the head salesman. This arrangement, however, does not relieve the head salesman of the responsibility of making his own personal quota.

The merchandising plan takes cognizance of the fact that some dealers in electrical equipment in the territory will compete with the companies aggressively and thus help the general load-building scheme. To place dealer competition on an equitable basis, the company sells only at list prices, allowing no premiums, and maintains an exact schedule of reasonable carrying charges for time sales. The company co-operates with the dealers to the extent of supplying them general promotional material and in some cases furnishes them stock for display and carries their time sale accounts. Another factor in the competitive situation is that only standard goods of recognized quality are handled by the companies.

Home Service Department

A valuable adjunct to the merchandising plan is the home service department. This department contacts the users of all domestic electric equipment to help educate them in the maximum economical use of their appliances. In 1930 this department contacted practically every range user on the system of both companies, teaching the most economical use of the oven and cooking pot, and in general attempting to help the customer get the most satisfactory service out of his equipment. Such activity has been found to be an excellent good-will builder, paving the way for more sales.

Portable Range Wiring

Another feature applying particularly to the sale of electric ranges has been the development of portable wiring equipment for use in rented homes, which has been a large factor in overcoming sales resistance on the part of renters. This equipment meets national and state code requirements, and in addition conforms to the civil law governing the removal of equipment from rented homes. It is sold for $35 installed and can be removed and reinstalled at a cost of not more than $5. In case a renter moves into a house that is permanently wired, this installation may be turned in to the company for a credit of $30.

The installation consists of a standard A.G., 2-circuit service cabinet containing a 60-amp. switch with branch blocks for two lighting circuits, one range circuit, and one water heater circuit. Twenty feet of ¾-in. flexible conduit with three No. 8 wires for the range connection, 20 to 40 ft. of B.X. No. 2 cable for the water heater, a section of ½-in. conduit for the ground, a meter loop, and all the necessary fittings to attach this equipment in place, constitute the remainder of the installation. It has been found that this equipment can be sold as a standard package of merchandise, can be installed with screws and clamps, and is easily removed, transported, and reinstalled.

By way of indicating that this merchandising plan has produced results, the average residential kw.-hr. consumption for the past two years is shown as follows:

	This Year	Last Year	Increase	Per Cent
Mountain States Pwr. Co.	681	590	91	15.4
The California Oregon Pwr. Co.	1,614	1,529	85	5.6

It should be noted that in most of the Wyoming territory of the Mountain States Power Company little effort is expended on selling electric ranges because of the cheap natural gas available there. Nine hundred ninety B.t.u. gas is sold at an average price of 50 cents per 1,000 cut.ft. in territory affecting 10,000 residential customers of the company, so that few electric ranges have been placed in territory affecting 10,000 residential customers of average kw.-hr. consumption in the Mountain States territory. A further reason for the difference in the two companies is found in the lower water heater saturation in the Mountain States territory.

RANGE Campaign Succeeds Through Employee Mobilization

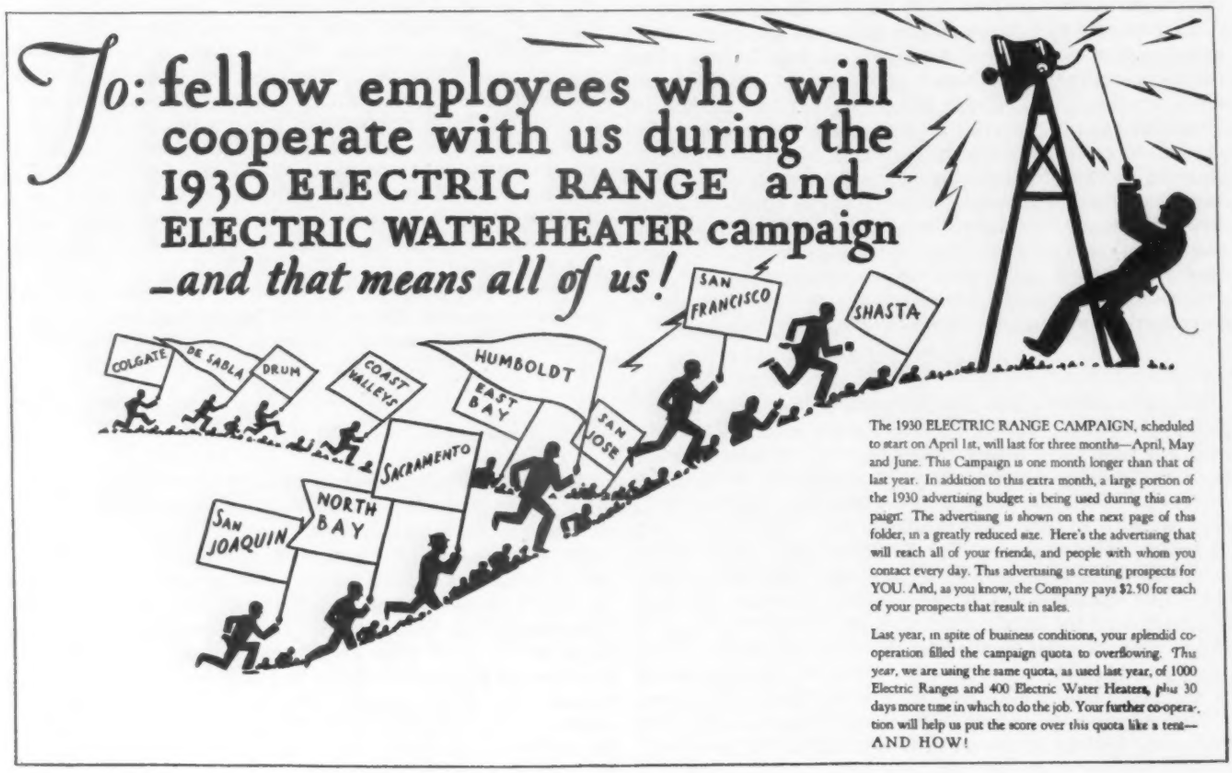
Neither Advent of Natural Gas nor Market Crash Prevent Overselling Electric Range and Water Heater Quotas When Personnel of Company Assists the Sales Force

ORGANIZATION of its employees spelled success for a range and water heater campaign of the Pacific Gas and Electric Company, which lasted from April to July. In face of slackened business conditions and the entrance of natural gas into the company's territory, the quota was oversold by 22 per cent.

"To the extra effort directed towards informing the company personnel of all details of the campaign," says R. E. Fisher, vice-president in charge of sales, "can the final outcome largely be attributed."

Before the project was made public, broadsides were sent to every employee outlining completely the advertisements which were to be used, the customer broadsides and letters which were to be mailed, objectives, sales points, and internal organization. For every prospect who be-

Before the project was made public, employees of the company had been organized and informed in detail as to the aims and purposes. The above broadside was mailed to each employee as a first announcement. On the back was a complete layout of all letters, advertisements, direct-mail, and customer broadsides which were to be used during the campaign, and large type reminded that "You bet, we still pay $2.50 for prospects"


To: fellow employees who will cooperate with us during the 1930 ELECTRIC RANGE and ELECTRIC WATER HEATER campaign
—and that means all of us!
COLGATE
DE SABLA
DRUM
COAST VALLEYS
HUMBOLDT
EAST BAY
SAN FRANCISCO
SHASTA
SAN JOSE
SACRAMENTO
NORTH BAY
SAN JOAQUIN
The 1930 ELECTRIC RANGE CAMPAIGN, scheduled to start on April 1st, will last for three months—April, May and June. This Campaign is one month longer than that of last year. In addition to this extra month, a large portion of the 1930 advertising budget is being used during this campaign. The advertising is shown on the next page of this folder, in a greatly reduced size. Here's the advertising that will reach all of your friends, and people with whom you contact every day. This advertising is creating prospects for YOU. And, as you know, the Company pays $2.50 for each of your prospects that result in sales.
Last year, in spite of business conditions, your splendid co-operation filled the campaign quota to overflowing. This year, we are using the same quota, as used last year, of 1000 Electric Ranges and 400 Electric Water Heaters, plus 30 days more time in which to do the job. Your further co-operation will help us put the score over this quota like a tent—AND HOW!

came a purchaser, the employees were reminded, $2.50 would be paid to the employee turning in the name.

The campaign was announced formally through H. M. Crawford, general sales manager, at a mass meeting of the sales department, each member of which was to impart co-workers with some of his enthusiasm. Plans were completely mapped before the public was informed.

To stimulate interest and competitive selling, awards and trophies were given to divisions and salesmen who reported the best percentage of quota results. Cash prizes ranged from $125 for the salesman who made the best per quota sales, to $10 for the tenth best report.

Women are welcoming the all-electric kitchen
AUTOMATIC ELECTRIC
Electricity heats water for ½ to ⅓ of a cent per gallon
WOMEN appreciate the cleanliness and the convenience of the all-electric kitchen. These are two reasons why almost every one of our customers today who is selecting an electric range is also selecting an automatic electric water heater.
Heating water with electricity is practical. Many electric water heaters installed for P. G. and E. customers, over 10 years ago, are still supplying dependable hot water service.
Another reason why women like the automatic electric water heater is that it offers flexibility in operation—
1. You may operate the heater manually—Turn the switch and heat the quantity of water desired and then turn the switch off. This is the most economical method.
2. You may turn the switch on in the morning and leave the heater operate automatically during the day and then turn the switch off for the afternoon or evening.
3. You may leave the switch on all the time and enjoy hot water 100% automatically—day and night. You'll have plenty of hot water at the turn of the faucet. Still, you will never have to watch the heater.
Automatic electric water heaters come, complete with insulated storage tank. Or if you like, you can obtain the automatic heater without the tank and attach the heater to your present tank.
For full details telephone or call at our office —or a dealer's store.
PACIFIC GAS AND ELECTRIC COMPANY
P · G · and E ·
Owned · Operated · Managed by Californians

Water heater sales were built by citing the advantages of an all-electric kitchen or one containing at least an electric range and water heater

Two of the many advertisements used by the Pacific Gas and Electric Company in a recent electric range and water heater campaign. Instead of selling "just a range," copy directed the attention of the customer to either the Hopoint or Westinghouse models, the makes featured by the company. To the advertising appeal and the policy of thoroughly organizing the employee ranks is due the success of the campaign, the quota of which was oversold by 22 per cent in face of gas competition and slack buying

Madam!
here's beauty, cleanliness and perfect baking
for women who love freedom from the kitchen
The Hotpoint electric range
HOTPOINT ELECTRIC RANGE
$7.50 down
PACIFIC GAS AND ELECTRIC COMPANY
P · G · and E ·
Owned · Operated · Managed by Californians

For women who love modern methods
...here's beauty, cleanliness and perfect baking
The Westinghouse Electric Range
Westinghouse ELECTRIC RANGE
$7.50 down
PACIFIC GAS AND ELECTRIC COMPANY
P·G·and E·

Weekly prizes were given to best divisional reports. With this impetus, 1,708 units of electric ranges and water heaters were sold against a "bogey" of 1,000 ranges and 400 water heaters.

An extensive advertising campaign, designed under the direction of J. Charles Jordan, manager of the publicity department, was carried in newspapers. Instead of selling "just an electric range," the advertisements carried salient advantages of either the Hotpoint or the Westinghouse range, the two makes featured by the company. Other insertions stressed the importance of an electric water heater as a kitchen necessity and the combination of heater and range.

Inducements of free electric heaters were offered to purchasers and, to point out the time and labor saving qualities of the electric appliances, curling irons and lighting fixtures were offered with the purchase of a range "because more time could now be used for social duties." Terms were set at $7.50 down and the balance in 18 months for either one or both appliances.

E. E. Perkins, electric appliance sales engineer, under the direction of R. T. Stephens, manager of electric sales, put into execution this spring campaign.

The wisdom of the policy of informing the employees was shown by the hundreds of prospects' names which were turned in. The success of the advertising appeal was evident in the increased ratio of water heaters to ranges sold.

A Series of four 6-page letters sent to all metal-working industries in the territory of the Southern California Edison Company
A monthly house-organ dealing with the application of Electricity to agriculture and industry
Sent to 25,000 Southern California Edison Co. Consumers

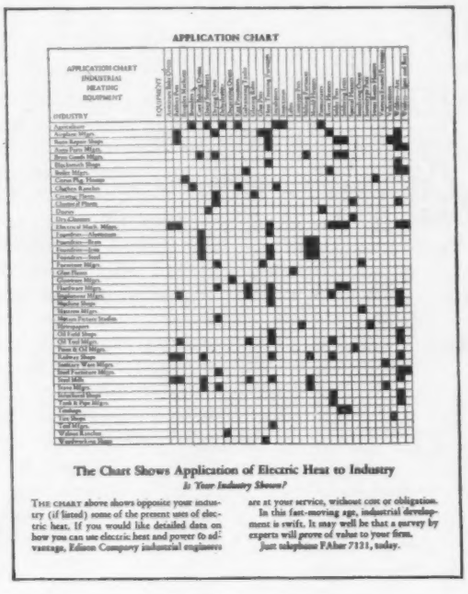
For purposes of this campaign, the industries were divided into three distinct groups—metal and metal working, miscellaneous industrial, and agricultural. Some 11,050 prospects were circularized in this direct-mail project to add 50,000 additional horsepower to company lines

Selling Power By Mail

HAVING proved that the use of direct-mail advertising campaigns has been particularly effective in selling domestic electric appliances, the Southern California Edison Company, Ltd., was determined to try direct-mail advertising in an attempt to develop industrial heating load. A survey made during 1927-28 indicated that there was a potential market for at least 50,000 additional horsepower of this type of service upon the lines of the company. In laying the plans for making this direct-mail attack, power consumers of the company were carefully analyzed and segregated into three specific classes.

Class 1 included those industries which had to do with the handling of metal and metal working. There were approximately 1,700 in this group. The second class was a miscellaneous group having to do with such widely diversified fields as mattress sanitary renovators, bake ovens, enameling processes, glass treating, etc. In this miscellaneous group 2,850 names were listed. The third group was made up of agricultural power users. A list totaling 6,500 names was selected from this classification.

For the metal trades group, a series of four combination letters and broadside pieces was prepared, urging the use of electric heat. Pictures of various applications of electric heat in as many types of industry as were possible to obtain are shown in the layouts. A feature of each broadside was an application chart of industrial heating equipment now being used by the various types of industry. For the miscellaneous group a series of two such broadsides was prepared. For the agricultural consumer, a series of four of these six-page broadsides was developed and used. The broadsides in each classification were mailed at intervals of approximately ten days. With each one of the mailings a business reply card was enclosed.


APPLICATION CHART

APPLICATION CHART INDUSTRIAL HEATING EQUIPMENT

INDUSTRY

EQUIPMENT

The Chart Shows Application of Electric Heat to Industry

Is Your Industry Shown?

THE CHART above shows opposite your industry (if listed) some of the present uses of electric heat. If you would like detailed data on how you can use electric heat and power to advantage, Edison Company industrial engineers are at your service, without cost or obligation.

In this fast-moving age, industrial development is swift. It may well be that a survey by experts will prove of value to your firm.

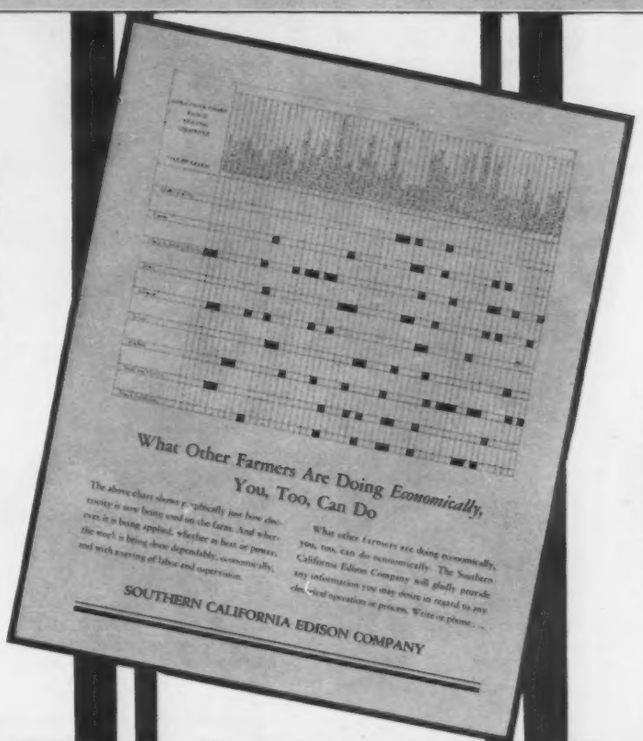
Just telephone FAber 7121, today.

One of the research investigation charts which were mailed to industrial users of power on the Southern California Edison Company system. This chart shows the application of industrial heating to various types of businesses

On the mailing list for the industrial plants there was placed not only the name of the head of each plant, but those of plant superintendents and foremen in order to get complete coverage and a proper spread of the story. Slightly more than 150 replies were received from the total mailings. It is impossible to credit this campaign with a specific amount of new horsepower taken on the lines, but the new business department of the company reports that the salesmen have found that these letters have given them an entree into establishments which they have been unable heretofore profitably to contact. In many cases reports from the sales organization indicate that the mailings have also acted as a rejuvenator of interest on the part of certain prospects who have "gone cold" on the idea of electric heat and power.

Motorized Equipment Saves Time and Labor and Makes Money for the Rancher Every Day
The "Electric Hen" Hatches More Eggs
No other Power for Irrigation is so Economical or so Dependable as the Electric Motor
Take Advantage of This Free Edison Service

Part of one of the six-page form letters stressing uses of power on ranch or farm may be seen above. These letters were sent to 6,500 prospects in the company's territory. The reverse side of this form contained a letter directed to the farmer-customer, pointing out the possibilities of electric power equipment as an aid to greater productivity and profits



The page on the left was also contained in this broadside. The results of the farm research investigations are graphically portrayed in a manner understandable to any layman. Below is another of the four farm broadsides, this one encouraging uses of electrical appliances in the ranch or farm home. The reverse side of this form was the same as that above

Electric Power and Light Bring Greater Comfort to the Farm Home . . . More Profit to the Farm Purse
How Greater Profits Are Being Made in the Dairy Industry by Using Electricity
Edison Company Offers Valuable Service FREE

Versatile Refrigeration

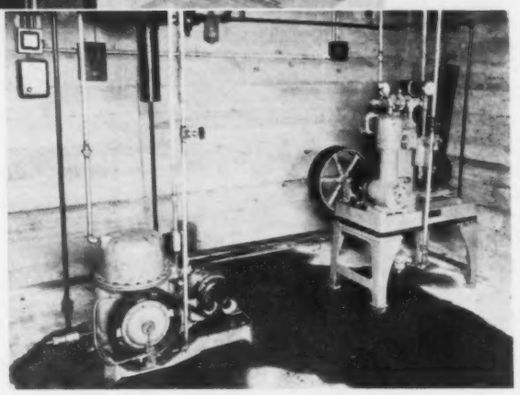
Electric Refrigeration Is by No Means Limited to Single Domestic Units. The Articles on These Pages Illustrate Only a Few of the Special Possibilities

WORKING on a schedule that calls for $309,000 in gross sales for 1930, fourteen salesmen and one floor demonstrator under J. M. Eakins, superintendent of the Public Service Company of Colorado's refrigeration department, sold 989 installations during the first half of the year ended July 1. A gross of well over $180,000 put the crew approximately $28,000 ahead of budget requirements.

Forty-two kitchens in this apartment house are equipped with Leonard refrigerators serviced by two Kelvinator compressors, each of which carries half the load

June's sales of 392 refrigerator installations give a fair conception of the stride now established by these men. Among this number are many commercial jobs, some as costly as $5,000, but counting only as one unit of sale.

One of the reasons for the good record is that salesmen are not harassed by calls from customers requiring service. The Public Service Company of Colorado standardized in 1927 on Kelvinators, with CO_2 as a refrigerant, for domestic use, and Lipmans, with ammonia, for commercial use. Less than three-fourths of a call per customer has been required since installation. This low service cost has been achieved by delivering all boxes cold, with ice cubes frozen. When an installation is made, it performs at maximum efficiency immediately, instead of taking several hours to generate a refrigerating temperature.



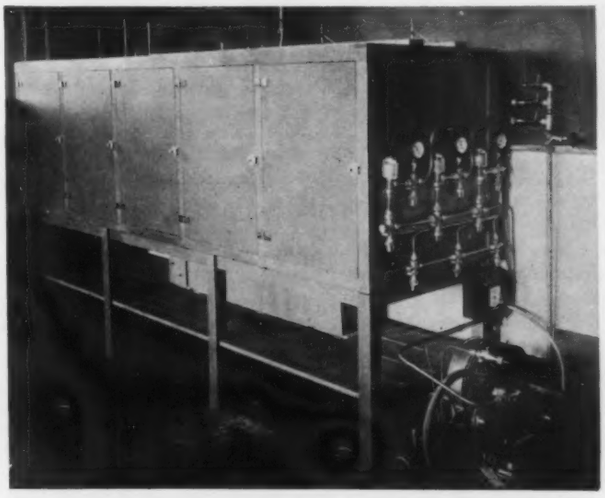
Lipman-Taylor refrigeration system in a Denver confectionery store. Lower photograph shows compressors for storage cabinet and freezer. Customers get a thrill from seeing orders enter the cup at the top of the freezer as liquid and emerge at the bottom as ice cream. Six minutes is required for the process. The freezer has a 50-gal. capacity. Storage cabinet, open at right, keeps ice cream hard in containers and prevents shrinkage loss

Another contributing factor is the prospect system by which employees in other departments are rewarded for listing prospects. Fifty-six employees, sold by their own eloquence and persuasion, have purchased Kelvinators since the first of the year.

All indications point to 80 per cent more electric refrigerator sales in Denver during 1930 than in 1929. First-half figures show that ratio of improvement with 523 home installations, 411 apartment house kitchens, and 55 commercial jobs.

REFRIGERATION in science is not new, but the installation of a multiple-type unit by the Electro-Kold Corporation, of Spokane, for the conducting of blister rust experiments by the University of Idaho in collaboration with the United States Department of Forestry is the first such use made of electric refrigeration.

In these experiments D. R. Miller of the forestry department and Dr. Hubert of the University of Idaho are germinating seeds of the rabes plant, promoter of the dreaded blister rust, which is working havoc among the great white pine forests of northern Idaho. The seeds are germinated in five cabinets with temperatures of 50, 59, 68, 77 and 86 deg. F., respectively. Refrigeration is necessary for the three cabinets of lowest temperature,



These five Electro-Kold refrigerating cabinets are being used by the University of Idaho and the U. S. Department of Forestry in experiments on blister rust. The temperature adjustments have been delicately made so that the temperature of any cabinet will vary less than one degree

and these have been connected with a 1/3-hp. Electro-Kold unit, having a Century induction-repulsion motor, which serves the three coils, one in each box. Delicate adjustments have been made so that the temperatures in the refrigerated boxes have not varied a degree. Room temperature is maintained at 73 deg. F. The accuracy of temperatures necessary for the success of the experiments makes it imperative that the doors of the cabinets be unopened for the twelve weeks' duration of the tests.

Henry Dittlevson, of the Electro-Kold Corporation, made the installation. Several other multiple-type units are being installed at the University of Idaho for other experiments.

▼ ▼ ▼

LOCAL resourcefulness recently saved the day for the Valley Electrical Supply Company of Fresno (Calif.) in the sale of a 65-cu.ft. General Electric refrigerator. R. Arkelian, owner of the Wahtoka vineyard near Reedley, had replaced an old walk-in ice box with a G.E., but was dissatisfied because the commercial machine had no provision for the manufacture of ice.

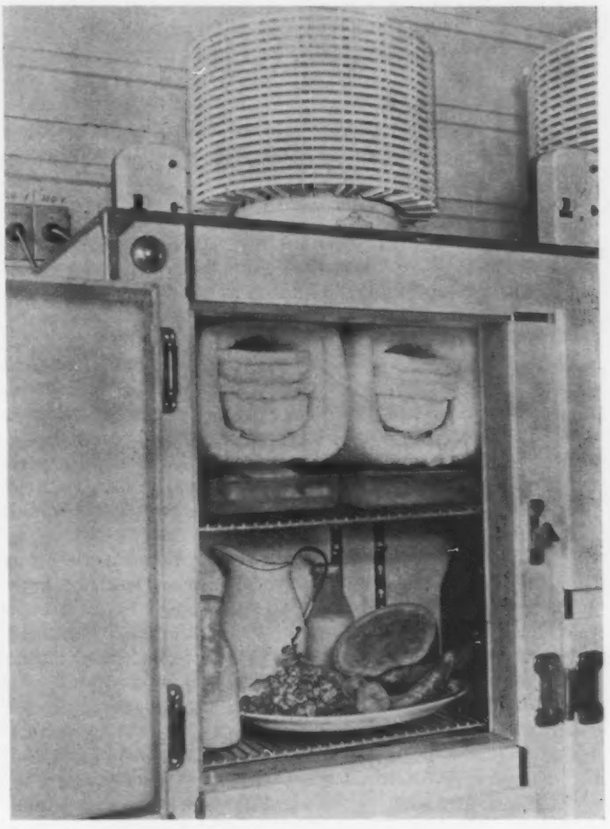
The deficiency was overcome in a novel manner by Valley Electric refrigeration men who set a large domestic unit in one end of the commercial unit for the sole purpose of making ice. The installation now has a capacity of 12 lb. of ice with a storage compartment for extra cubes in anticipation of extra demand. The large unit has a ½-hp. motor operating at 220 volts, while the smaller unit operates with a 1/6-hp. motor off the 110-volt service.

What Every Woman Wants

WHAT every woman expects from a salesman who calls on her was described so unmistakably by Mrs. Elizabeth Stone McDonald at the last Frigidaire regional convention at San Francisco, that no one who sells anything can afford not to regard every one of her rules as fundamental. She said:
"As a woman I want—

1. *Admiration*—the admiration that expresses itself to me in perfect courtesy.
2. *To do the talking*—I think that I know what I want and I want to express it, not to be told what I want by someone who doesn't in the least know, cannot possibly know.
3. *Selling* that is based entirely on *my* personal necessity and convenience, no one's else.
4. *To be treated* as though my case, my problem is the only thing in the world that matters to the salesman or to me."

Because a General Electric commercial refrigerator he was using had no facilities for ice manufacture, a vineyard owner installed a domestic unit for this purpose alone. The unit now has a 12-lb. ice capacity with extra storage space



The Sequel to a Survey

An Intimate Appraisal of the Various Kinds of Sales Outlets for Electrical Merchandise

Last year one of the editors made a personal store-to-store survey of three cities, representative of Western communities generally, to determine "Who Sells Appliances." In this follow-up article he tells the "Why, How, and What It Means"

PRIMARILY a survey is conducted to gather statistical facts. It is inevitable, however, that any number of interesting sidelights will develop. The person making the survey, if at all interested in trends and tendencies, in the play of opinions and the effects of personality on the problem, cannot help but derive from the survey many important factors as significant in their import as the numerical facts themselves. A survey of statistics conducted from an office swivel chair or by mailed questionnaires may have little to brighten it. But the store-to-store interview with proprietors, executives, and clerks makes up a rich pattern of human reactions and economical biases which the statistics have no possible means of recording.

Resulting from the survey made by one of the editors of ELECTRICAL WEST last year, and reported in this magazine (October, 1929, pp. 163-170, "Who Sells Appliances?"), were a number of unrecorded observations.

The really interesting observations of the survey, then, find themselves best described under certain headings, as follows:

CENTRAL STATION'S MERCHANDISING

It will be remembered, omitting refrigerators, that the survey last year revealed that from 17 to 29 per cent of the electrical appliance volume was sold by the central station, depending on its particular set-up. Comparing the total volume, where the central station for a number of years has been an active merchandiser, with that where the central station had done little or none, the totals are surprisingly similar. A difference of at most $1.10 per meter, it will be remembered, represented the added volume resulting from the energetic development work of the merchandising power company.

In view of other subsequent discoveries, the observer can be pardoned a surprise that the added result is so small for so intensive an effort. True, the central station has itself sold more, but the total market has not been much greater. Two answers are possible.

1. The market can absorb only so much per year, and hence, if one outlet sells a large proportion of this volume the other will sell less.

2. Something is lacking to keep the entire group of sales outlets hammering away at the market simultaneously in order to make it yield a greater proportion of the consuming public's buying power.

This is a problem the central station should consider seriously. Merely to do a large volume itself and deprive others, who formerly had sold much to the public, of that portion of their business, is not in the public interest and is not consistent with the policies of most utility companies.

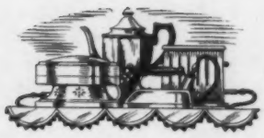
Yet, where no merchandising effort is put forth, what happens? The popular appliance sells well. The long margin appliance receives promotion and advertising. The washing machine, the vacuum cleaner, the radio, the refrigerator sell themselves. While their boom is on they need scarcely any help. When it is over they limp along. There is no development work done on the appliance needing costly pioneering. There is no new stimulus given the jaded appliance which was the Beau Brummel of yesterday's sales to keep up its respectability. There is no initiative on new appliances, as witness that in one city scarcely anyone sold electric ranges until the central station began to sell them, and now several furniture dealers are handling ranges.

On the other hand, where the central station is active all is not harmonious either. If the central station merchandising operation is conducted to make itself pay a merchandising profit a large proportion of its effort must be spent on the long margin appliances which are not necessarily the load builders. The sales-resisted, less-appealing, but more ample load-builders are apt to be regarded as necessary evils by the sales crew. And competitive conditions with other merchants are not harmonious no matter how hard the public relations department strives to keep them so.

It may be said without fear of contradiction that all merchants, whether they actually admit it or not, inherently resent the entry of the power company into merchandising. The feeling is really the same one which power companies feel toward a municipality entering the power business. There is a feeling prevalent that a monopoly has no business competing with those who enjoy no such privilege. This feeling, the observer found, was almost universal. Its intensity varied and there were those merchants who said they favored power company merchandising, because it stimulated business. There were others who said they were indifferent. Many chain-store and low-priced concerns were rather glad that the power companies set a price, just so it was rather high and that they could undercut it to their own advantage. Rather a left-handed sort of support, it must be admitted.

There were others who blamed themselves, feeling that if and when they made the effort the central station would retire from the field.

Those who objected ranged from the mild to the rabid. Some objected no matter upon what basis the merchandising was conducted. Others objected because of their



own impotence in attempting to match against the power company their own limited resources, small sales force, and lack of margin for advertising. The most universal objection was that the central station salesmen implied an obligation on the part of the customer to buy from the source of the electric energy supply which the merchants could not successfully contradict.

And here was a significant thing. Where the competion had been going on long the merchants had definitely given up carrying the lines which the central station carried, or, if they carried them, did not work on them. Thus, in effect, they became non-productive outlets for electrical merchandise. In such cases the market possibility had slumped back to what the central station could sell by itself together with the casual sales made without effort on the basis of the general stimulation of the market by the power company.

Universally there was a cry against the terms and prices, the premiums and inducements used by the central station to hurry sales along. Many of these complaints were intelligent, carefully studied reactions based upon their own longer experience as merchants in sound financing of time payments. These deserve intelligent consideration.

In a word, the central station concededly occupies the crucial position in the merchandising picture. Whatever it does is vastly important. This responsibility grows bigger with the growth of the company or with its consolidation into large enterprises. No less true is that its opportunity for leadership, for setting an example, for good constructive upbuilding increases with its size. But it is highly important that it preserve what little initiative exists in all possible merchant load builders in whatever it does. If, by its sales method, it has thrust back upon it the sole and entire job of selling the electrical market it may find the burden heavy and increasingly costly to carry alone. If it can devise ways and methods to bring to its aid every merchant as a volunteer sales force, the burden will lighten and become less costly. Moreover, it is inevitable that an organized merchant front, all sponsoring electrical merchandise, is destined to widen the acceptance and increase the electrical purchases per family.

The Specialty Store

In nearly all surveys the specialty store looms up as the prize outlet for electrical appliances. In last year's survey, for example, from 31 to 73 per cent of the appliance volume of the cities surveyed was sold by the specialty and so-called electrical stores.

The difference between the strictly specialty store and the electric store is one of variety. The former concentrates on one or two appliances—such as refrigerators or washers and ironers—while the latter handles several lines of, say, washers, ironers, cleaners, refrigerators, radio and health appliances. It will be noted that these stores concentrate on long margin, popular, easily sold appliances and make no effort on the difficult or load-building lines. It is also to be noted that the specialty organizations wax and wane with the saturation curve of the community in which they operate. On the whole they are "one shotters," cleaning up the cream of the market and then either passing out or shifting to an entirely new line.

Of the electric store this is not true. Its survival is based on its ability to have on hand a group of lines which counterbalance each other on seasonal sales; such as refrigerators for summer and radio for winter. With careful enough attention to the selection and supervision of salesmen, to the establishment of sound and consistent sales and service policies, to the proper account keeping, to the care with which they accept term accounts and the reasonable safety of their payments, and to the rigid collection of accounts, the electric store becomes a well competitor they leave the field for greener pastures.

But both specialty and electric stores are weak on the load-building lines. They are not susceptible to industry movements for the increase of electrical markets. They are intensely self-centered organizations whose chief aim is to make their own merchandise profit. When they find a line dominantly sold by a central station or a competitor they leave the field for greener pastures.

An amazing fact is that the specialty lines of yesterday are going back to the other electrical channels. Trace the sewing machine history of specialty sales organization with its rise, boom, and decline and the chart will fit those of the vacuum cleaner, then the washing machine, perhaps the radio, and possibly soon the refrigerator. After a certain percentage of saturation has been achieved the organization specializing on one or two lines finds the sales expense increasing and the volume dropping off. The expense of maintaining an organization in the field solely on one appliance, even with a longer margin than that enjoyed by the ordinary retail store, becomes too great and the specialty organization either shifts to a new and as yet unexploited specialty or else folds its tent.

Evidence of this is abundant in the distribution of the vacuum cleaner and the washing machine. Electrical contractor-dealers who gave up washers as unprofitable in competition with specialty stores some years back are to be seen carrying and aggressively selling them again. Department stores and house furnishings concerns likewise are predominating outlets for these. The day when the radio and refrigerator will come back into the regular retail channels is a prediction often heard.

Contractor-Dealers

When thinking of contractor-dealers it is easy to fall into the habit of thinking of the worst rather than the best of such establishments as typical of the group. If the survey demonstrated anything clearly it was that there are in each locality at least one, two or three strong, active merchandisers among the contractor-dealers, even though the remainder merely carry a few appliances for accommodation to their wiring customers and friends. These two or three stores are really important outlets for more reasons than merely that of volume. Among the other contractor-dealers there is a decided trend out of merchandising. Most of them carry lamps and wiring accessories. However, it may be stated as almost a rule that those who do carry appliances carry a very high-grade line. They may carry only a small stock but it is of the highest quality.

Asked why this was true one contractor-dealer declared it a simple matter. When a customer buys an appliance and something goes wrong with it, the contractor-dealer is practically always the one to whom it is brought for repair. Between his experience with inferior grade merchandise failures on the one hand and the desire not to be bothered with service, usually asked free, on something he sells himself, the contractor-dealer is particular in his buying. Another factor is that if he is not a

merchant by nature he dislikes the idea of selling anything on which the price can be cut. He likes a standard price, nationally advertised and with some assurance that it will be maintained.

The really good merchant contractor-dealer is a valuable asset to the community. He acts as an excellent counter-antagonist to the central station merchandising department. For the many people, who for any of dozens of reasons do not want to purchase from the power company, he is a source of electrical merchandise. If he is in sympathy with the central station his influence is greater than that of the department stores or other retail outlet in matters of policy and service, because somehow, he is an electrical "expert."

The electrical contractor-dealers, particularly the good merchant type (as well as the best of the strictly contracting group, many of which proved to be among the most influential business men in the community), are the one group in the selling of appliances who have some semblance of industry consciousness. They are interested in the electrical industry itself as a unit and will participate in industry movements when their own interests are developed by them. The law of survival of the fittest will take care of the fringe contractor-dealer. But the strong and well established deserve the recognition of the industry. Those of the right type are a dominant commercial and political factor in their communities.

The Department Store

Of late years the department stores have become an increasingly important outlet for electrical merchandise. In the survey they represented from 8 to 29 per cent of the total volume. Including refrigeration they did from 19 to 30 per cent of the volume. An interesting fact was that where the utility was most active they did 29 per cent of the total volume for the city.

Next to the power company itself—in some cases exceeding it—the department store enjoys the best advantage of position. It has size, finances, buying power. It can offer long terms or sell on charge accounts. The name of the firm is well established. Many families concentrate all of their purchases on a single department store.

Many of the electrical lines, such as radio, refrigerators, washers and cleaners, are sold by concessionaires who sell from the store, under its name, but who carry their own accounts and risk. The smaller appliances are generally a part of the houseware, crockery and kitchen equipment stock.

Their weakness, as far as the electrical industry is concerned, is twofold. First, they are weak on service and repairs. The electrical contractor-dealer is the best on this.

Secondly, they are immune to sales promotion or pioneering co-operative programs. They remain independent and aloof from the electrical industry. It is all very well for the electrical industry to build up acceptance. They will cash in on it. Their own advertising usually features an appliance as a special.

This independence of attitude and position makes it difficult, even the Los Angeles Bureau of Power and Light found, to get them to participate on equal terms with other merchants in a strictly through-the-dealer range sales drive. Most of them have a strong direct-buying advantage which they are not hesitant to use to crush competition.

However, as a sales outlet they are important enough to require whatever special effort is necessary to acquaint them with industry policies and programs and to solicit their participation in them on a basis fair to all other groups.

Furniture and Household

Two other outlets grow increasingly important in the distribution of electrical goods. These are the furniture store and the general household equipment store. The former began business as a furniture dealer. The latter began as a crockery store. Gradually the scope of each has widened. In the near future it is not unreasonable to expect them to merge, particularly under the stress of chain mail order house competition.

Meanwhile, in the expansion of each, electrical appliances have become a new and logical line. Usually where one or two special makes of major appliances are sold energetically by the power company, they select an entirely different make which they can sell upon its contrasting special features.

These, like the department store, enjoy a strong point of vantage in customer buying habits. The furniture store, with a department of house wares, finds little difficulty in selling a family its entire household furnishings and appurtenances, from the drapes to the toaster, from range and water heater to grand piano. And it is logical that it does so.

Where the market has been sufficiently pioneered by the power company, this type of merchant finds ranges a profitable line. When it comes to terms, is he not already set up to extend long time payments?

Likewise, in apartment house installations where such concerns are already bidders on household furnishings the ranges and refrigerators go along with the chairs and beds in the figure.

One prominent furnishings house in one of the surveyed cities had an interesting attitude on power company merchandising. As long as the power company was aggressive, and offered exceptional terms which other merchants found impossible to match or compete with, this furnishings concern was satisfied. With its own financial set-up it could offer even longer terms than the power company and besides had the advantage of selling the complete home equipment. Therefore, as long as this situation prevailed between it and the power company the field would be predominated by it and no other competition could survive.

In most cases the household furnishings dealer and furniture man will be found to be similar to the department store—independent and not particularly interested in the electrical industry or its programs. Yet here, too, is an outlet worth cultivation. If the right approach is made, and persistently and patiently enough, this type of merchant can be won over to co-operative promotional campaigns to a much greater extent than at present.

Hardware Stores

Hardware stores have long been considered good electrical outlets. Next after the contractor-dealer they were cultivated by the electrical wholesaler as an additional outlet, one with a real merchandising knowledge and set-up. Though the survey showed hardware dealers sold only from 1.4 to 3 per cent of the total appliance volume, this in general is true.

With the hardware man electrical merchandise is just another line. But at least merchandising with him is no side issue. It is his business. As a rule the hardware man has an innate sense of quality and with few excep-

tions sells only those appliances which he feels will not come back for service.

Moreover, the hardware man is usually strong for price maintenance. In one city, in which campaigns of appliances were put through dealers, the one objection voiced by the hardware men was that the special feature appliance was a cut price offer.

Naturally, there are some out-and-out cheap or cut-price hardware concerns, too. It is of the staunch association type of hardware merchant that the foregoing has been observed.

The weakness of the hardware outlet is its indifference. Appliances are just another line. The hardware merchant isn't going to neglect his other lines just to push electrical lines, particularly when they earn him less profit than his hardware stock. Therefore, campaigns and special sales or promotion plans do not move him to extraordinary activity. He participates but he doesn't neglect his trade in paints, nails or sink strainers. Likewise, few will sell any but the smaller, more popular appliances. Ranges and other heavy-duty equipment do not interest many.

Chain Stores

Nothing can be done about them, so it will do little good to condemn the chain stores further than has already been done. It is true beyond doubt that they do a sizeable volume in electrical goods, from lamp cords and plugs to dollar toasters and four-dollar waffle irons. No figures are available. The branch managers of these stores are really not managers but supervising clerks. Even where they know the figures on volume they cannot give them out. The head offices of such concerns likewise refuse information.

Observation indicates that there fall into this group the 5-10-15-cent stores, the mail order house branch stores, and the foreign made goods in imitation of American products sold in low-priced stores. Some department stores and hardware stores fall into the same classification. The chain mail order house stores often have appliances carrying their own name but manufactured for them by standard manufacturers.

The repair problem is handled simply by replacement. One or two replacements usually end a complaint and disgust finally terminates the problem. The purchaser considers that he bought it cheaply and hence has only himself to blame if it fails. The merchant or manufacturer who sometimes wonders whether quality in make and in advertising are worth while may find little satisfaction in the fact that the buyer of a cheap appliance knows it is cheap and takes the loss himself. If he buys a quality appliance and it fails he seldom is so complacent.

Some of these cheap appliances, it must be admitted, do give a surprising service occasionally. The American's love of chance may enter into this situation more than appears.

The effect of chain-store selling, however, is hardly healthy. It lowers the price level, keeps the quality lines seeking lower retail prices rather than more profitable and hence promotional margins to the dealer. Low-priced help selling such merchandise helps to lower the community buying power and living standards. The one thing which can be said favorably is that many people get a taste of electrical appliance convenience for the first time after buying a low-priced article they have always wanted but never felt they could afford. When it gives out, the better appliance is bought to replace it.

Drug Stores

Drug stores as a rule fall into the chain store class when it comes to electrical appliances. Of the miscellaneous group of appliance outlets they are the largest, selling from 1 to 6 per cent of the appliance volume. Doing largely an accommodation trade, or one in low-priced specials to bring customers into the store, they sell chiefly irons, curling irons, health lamps, toasters, and other miscellaneous appliances. It is said that many such drug chains have suffered such a drop in prescription business because of their general store character, that efforts must be made to regain it.

Jewelers

There were two classes of jewelry store appliance selling noted by the interviewer. The first was the dignified jewelry concern which carried expensive percolator urn sets and high quality lines for Christmas or gift purposes. Such appliances enjoy little use. They are jewelry and their load value is very small.

The other type was just the reverse. In several instances jewelers had used electric appliances as bait for the starting of charge accounts.

Music Stores

Just as music stores changed radically with the advent of the radio and the dropping off of the piano, phonograph and record trade, so it is to be expected that with radio reaching saturation many music stores will evolve into electrical stores. Particularly will this come about if the promises of two or three radio manufacturers that they will bring out low-priced refrigerators soon materialize.

In one city a long established music store already had become an important electrical store. It carried a full line of appliances in a separate department and seemed to be making a success of the venture.

The Merchandise

So much for the outlets for merchandise. What of the merchandise itself? Was there any opinion prevalent as to any factor related to the merchandise itself?

As previously outlined, the washing machine and vacuum cleaner point a path which other appliances will follow. It is significant that the washer has dropped in price level in order to tap another and more modest buying level. Already radio has followed the same steps, as have cleaners. There is an indication too that refrigerators will likewise seek lower buying levels with lower priced boxes.

The ironer is coming into its own, every indication seems to show. It is the small ironer, interchangeable with a wringer on a low-priced washer that is ushering in this acceptance. With it is being fostered the table model, and likewise the floor unit type.

That something must be done to save small appliances from stagnation becomes increasingly evident. Even with strong power company driving force the small appliances are beginning to slack off in sales.

Perhaps the answer is one which the industry has not wanted to face but which looms more and more in importance—margin.

When it is considered that practically all other lines of merchandise carry margins of from 50 to 100 per cent, the 30 to 40 per cent available on electrical appliances is small. True, electrical appliances are lower in deprecia-

tion and obsolescence, but not as low as formerly because of the many new lines and refinements brought out to liven them as selling merchandise. With this factor of style and construction feature improvement growing, there must be a corresponding margin increase to protect the dealer.

There are many dealers of the various classes who blame the short margins on electrical appliances for all their difficulties with central stations in merchandising policies. They argue that it was not economically sound to make it necessary for the utility to pay for all of the pioneering cost on appliances, both major and minor. If they were to be sold at all they should be sold without a subsidy such as the absorption of losses in merchandising costs by the power company in order to build load through the sale of the appliance.

As for the argument that if larger margins were allowed they would be given away by the dealers in cut prices, the answer was that merchants who know their costs would not give the discount away and those who didn't know their costs had no right to be sold stock in the first place.

The entire subject of discounts and margins is destined to become one of serious consideration in the very near future.

Distribution Channels

At the time each store proprietor was interviewed the buying channels of that organization were asked and noted. Report on that phase of last year's survey has never been made.

In almost every instance such appliances as refrigerators, radio, washers, ironers, and vacuum cleaners were being purchased direct from manufacturers or their distribution agents. With the exception of the contractor-dealer and hardware groups this was true. In the latter group practically all purchases were made through wholesalers.

Department stores and houseware establishments in many cases purchased part of their small electrical appliances from local wholesalers, but nearly all indicated that their intentions were to buy more direct from manufacturers as time went on.

It would appear from this, and it was almost the same situation in each of the four cities surveyed, that the wholesaler is being by-passed more and more by all the outlets for appliances except the strictly electrical. The latter include the power company and the electrical contractor-dealer and in some cases the electrical store. While many jobbers now enjoy considerable volume from department stores, furniture and housewares stores, they do not promise to remain customers any longer than necessary. Many of the department stores are units of national chains. These look forward to mass buying from the manufacturer. Even the independents said they were buying more direct each year.

The answer to this on the part of the electrical wholesaler is a more intense development of the few good electrical contractor-dealers, making them more dominant sales outlets. It means, too, that new contractor-dealers who are extended credit with which to start business should be appraised as to their selling and merchandising ability.

General Conclusions

Finally, there are several conclusions which seem inevitable because of their serious import. They are presented here not critically but in the scientific spirit, which is one of wanting to know in order to improve. To the affected branch of the industry they may either be so obvious as to have been overlooked or they may simply have been passed by in the race for growth. Yet because they represent down-on-the-ground reactions and observations they should be scrutinized, appraised and weighed as to their final significance before being dismissed.

1. The novelty appeal of electrical merchandise is fast disappearing. The wonder over the appliance from its electrical or mechanical features is less. A people whose interest is jaded by airplane flights over the poles, radio conversations around the globe and the conquering of cancer cannot be expected to be brighteyed and eager over a mere electrical appliance. A new appeal is needed.

2. Electric appliances suffer by being utilitarian as opposed to luxurious. Therefore, they require more sales effort, and as this is costly there must be more profit in selling them. How this can be accomplished in the face of demands for price reductions is a serious problem indeed.

3. Ignorance of rates is still widespread. It still engenders distrust and ill will. There is a big job ahead of the utilities in the selling of *all dealers* on the rates and how to sell them to the public. Favorable rates are a big factor in power utilization. Ranges and water heating are particularly affected by rates.

4. Dealer attitude has a very real effect on the market. This attitude is not the result of reasoned analysis of the situation. It is based almost entirely on emotional reaction. If the central station wishes this attitude to be favorable, helpful, productive of more sales and better public feeling, it must study this emotional reaction continuously. The central station must not become discouraged if it is misunderstood or itself becomes biased because of merchant ignorance or injustice.

5. Wiring marks the final saturation point in any community. There must be more wiring sold, bigger wire and greater adequacy. The entire industry must be mobilized to sell wiring in every word it speaks.

6. There is a wonderful opportunity for leadership open. After all, ten outlets can sell more than one, especially if they are all working in unison.

Employee Saturation

Returns from questionnaires sent to employees of the Southern California Edison Company, Ltd., disclose a marked increase in use of electric appliances by these utility employees. A tabulation showing the number of appliances in use during 1929 as against a similar tabulation for 1928 shows increases in every item listed.

The list of appliances follows:

	1929	1928
Air heaters	1,360	808
Battery chargers	732	695
Battery eliminators	583	575
Chafing dishes	165	116
Cooker-pots	1,416	991
Corn poppers	651	128
Curling irons	2,206	1,795
Egg-cookers	139	53
Fans	740	587
Floor waxers and polishers	140	90
Grills	465	403
Heating pads	1,562	880
Hot plates	379	209
Immersion heaters	131	75
Ironers	297	219
Laundry irons	3,608	2,891
Miscellaneous motors	603	291
Percolators and urns	2,129	1,574
Radios (a.c.)	2,173	823
Ranges	1,310	571
Sewing machines	1,319	1,060
Soldering irons	734	468
Table stoves	266	190
Toasters	2,704	2,082
Vacuum cleaners	2,470	2,024
Vibrators	479	322
Waffle irons	2,270	1,446
Washing machines	1,811	1,351
Water heaters	537	220
Refrigerators	280	113
Total	33,659	23,050

Nine Out of Every Ten Buy Ironers

That the Day of the Ironer Is at Hand Was Demonstrated by This Company in an Unusually Successful Drive. Organization to Do the Job Means Everything to Results, However

EFFECTS of campaign organization on campaign results was amply demonstrated in a recent Thor washer and ironer project of The Washington Water Power Company. Nine ironers were sold for every ten washers in Spokane; in outlying towns the ratio was but three ironers to ten washers sold. The difference in showing was characterized by Ross B. McElroy, assistant sales manager, as the result of the difference in sales organization and the use of an ironer demonstrator in Spokane, a service not available to the smaller towns.

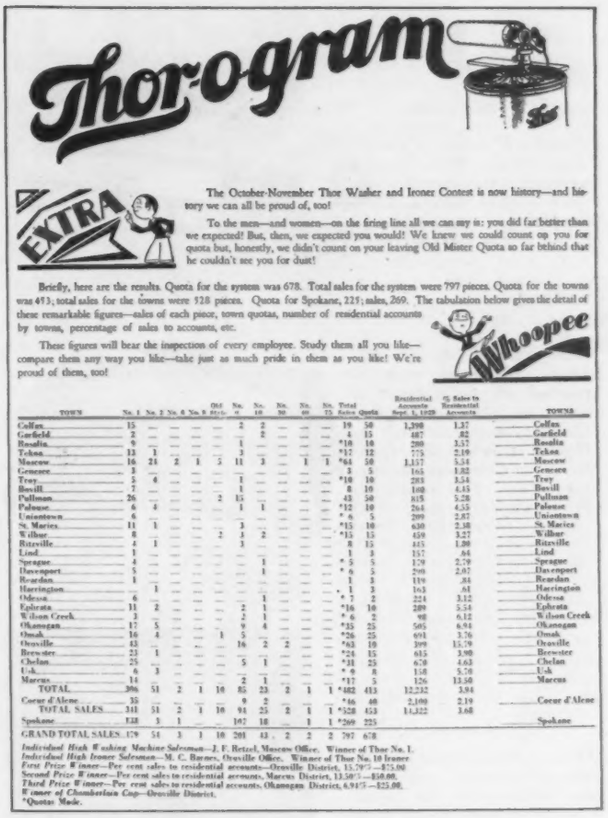
Average ratio for the system in this campaign, in which 547 washers and 250 ironers were sold, was 4.6 ironers to 10 washers, declared by R. G. Chamberlain, vice-president of the Hurley Machine Company, to be nearly double the national average, as revealed by records of Thor campaigns in all sections of the country.

Quotas allotted to each salesman in Spokane at the start of the project were based on a point system in which one point was given for each washer and three points for each ironer sold. The larger credit given for ironer sales had the obvious effect of inducing salesmen to exert special effort to sell this device with the washer. Sales in the other towns were based on the number of pieces sold.

In Spokane, a young woman was employed to demonstrate the ironer at the call of any salesman. For each demonstration she received $2 from the salesman, who thus exercised careful judgment as to when to avail himself of such help. However, 60 per cent of the ironer sales in Spokane were closed only after a demonstration to the prospect, indicating that a number of sales might easily have been lost had not this service been available. Moreover, because of the familiarity of the customer with the ironer after a demonstration, more of the customers were satisfied and a better understanding of the machine and its uses was created. Such demonstration service was not available in towns other than Spokane; consequently, it has been felt that this feature contributed materially to the much higher ratio of sales.

During the campaign any Thor laundry equipment was offered for $1 down and $7.50 a month. These terms applied whether the prospect chose to buy the washer alone or the washer and ironer combined, the only difference being that the time period over which the payments extended were lengthened in case of the purchase of both. Further, the price of the complete set was $5 less than the sum of the prices of the individual pieces. As psychologically the customer usually reckons the cost of the article in terms of the amount of the monthly payment, rather than the total to be paid, the ironer seemed to be given almost free of charge.

A previous campaign had disclosed that the ironer had often been oversold; too great powers had been attributed to it by the salesman. Large numbers of reverts showed that the customers had not been thoroughly schooled in the uses of the ironer for the more delicate articles. Sales were then made with the explanation that anyone could easily do the flat work which constitutes 90 per cent of the home ironing, and eventually learn to do the rest.



Thor-o-gram

EXTRA

The October-November Thor Washer and Ironer Contest is now history—and history we can all be proud of, too!

To the men—and women—on the firing line all we can say is: you did far better than we expected! But, then, we expected you would! We knew we could count on you for quota but, honestly, we didn't count on your leaving Old Mister Quota so far behind that he couldn't see you for dust!

Briefly, here are the results. Quota for the system was 678. Total sales for the system were 797 pieces. Quota for the towns was 473; total sales for the towns were 528 pieces. Quota for Spokane, 225; sales, 269. The tabulation below gives the detail of these remarkable figures—sales of each piece, town quotas, number of residential accounts by towns, percentage of sales to accounts, etc.

Whoopee

These figures will bear the inspection of every employee. Study them all you like—compare them any way you like—take just as much pride in them as you like! We're proud of them, too!

TOWN	No. 1	No. 2	No. 6	No. 8	Old Style	No. 40	No. 50	No. 60	No. 75	Total Sales	Quota	Residential Accounts Sept. 1, 1929	% Sales to Residential Accounts	TOWNS
Colfax	15	—	—	—	—	2	2	—	—	19	50	1,390	1.37	Colfax
Garfield	2	—	—	—	—	—	4	—	—	6	15	487	.82	Garfield
Rosalia	9	—	—	—	—	1	—	—	—	*10	10	280	3.57	Rosalia
Tekoa	11	1	—	—	—	1	—	—	—	*17	12	775	2.19	Tekoa
Moscow	16	24	2	1	5	11	3	—	1	1	*64	50	1,157	5.54	Moscow
Genesee	3	—	—	—	—	—	—	—	—	—	3	5	165	1.82	Genesee
Troy	5	4	—	—	—	1	—	—	—	—	*10	10	283	3.54	Troy
Bovill	7	—	—	—	—	1	—	—	—	—	8	10	160	4.45	Bovill
Pullman	26	—	—	—	2	15	—	—	—	—	43	50	815	5.28	Pullman
Palouse	6	4	—	—	—	1	1	—	—	—	*12	10	264	4.55	Palouse
Uniontown	6	—	—	—	—	—	—	—	—	—	*6	5	209	2.87	Uniontown
St. Maries	11	1	—	—	—	3	—	—	—	—	*15	10	630	2.38	St. Maries
Wilbur	4	—	—	—	2	1	2	—	—	—	*15	15	659	2.27	Wilbur
Ritzville	4	1	—	—	—	3	—	—	—	—	8	15	445	1.80	Ritzville
Lind	1	—	—	—	—	—	—	—	—	—	1	3	157	.64	Lind
Sprague	5	—	—	—	—	—	1	—	—	—	*6	5	179	2.79	Sprague
Davenport	5	—	—	—	—	—	1	—	—	—	*6	5	299	2.07	Davenport
Reardan	1	—	—	—	—	—	—	—	—	—	1	3	139	.84	Reardan
Harrington	—	1	—	—	—	—	—	—	—	—	*1	3	163	.61	Harrington
Odessa	6	—	—	—	—	—	1	—	—	—	*7	2	224	3.12	Odessa
Ephrata	11	2	—	—	—	2	1	—	—	—	*16	10	289	5.54	Ephrata
Wilson Creek	3	—	—	—	—	2	1	—	—	—	*6	2	98	6.12	Wilson Creek
Okanogan	17	5	—	—	—	9	4	—	—	—	*35	25	505	6.94	Okanogan
Omak	16	4	—	—	1	5	—	—	—	—	*26	25	691	3.76	Omak
Oroville	43	—	—	—	—	16	2	2	—	—	*63	10	399	15.79	Oroville
Brewster	23	1	—	—	—	—	—	—	—	—	*24	15	615	3.90	Brewster
Chelan	25	—	—	—	—	5	1	—	—	—	*31	25	670	4.63	Chelan
Ush	6	3	—	—	—	—	—	—	—	—	*9	8	158	5.70	Ush
Marcus	14	—	—	—	—	2	1	—	—	—	*17	5	126	13.50	Marcus
TOTAL	396	51	2	1	10	85	23	2	1	1	*882	413	12,232	3.94	
Coeur d'Alene	35	—	—	—	—	9	2	—	—	—	*46	60	2,100	2.19	Coeur d'Alene
TOTAL SALES	341	51	2	1	10	94	25	2	1	1	*528	453	14,322	3.68	
Spokane	138	3	1	—	—	107	18	—	1	1	*269	225			Spokane
GRAND TOTAL SALES	179	54	3	1	10	201	43	2	2	2	797	678			

Individual High Washing Machine Salesman—J. F. Retzel, Moscow Office. Winner of Thor No. 1.
Individual High Ironer Salesman—M. C. Barnes, Oroville Office. Winner of Thor No. 10 Ironer.
First Prize Winner—Per cent sales to residential accounts—Oroville District, 15.79% —$75.00
Second Prize Winner—Per cent sales to residential accounts, Marcus District, 13.50% —$50.00.
Third Prize Winner—Per cent sales to residential accounts, Okanogan District, 6.94% —$25.00.
Winner of Chamberlain Cup—Oroville District.
*Quotas Made.

This "Thor-o-gram" is one of a series of sales bulletins issued during washer-ironer campaigns to acquaint and stimulate the salesman. This particular "Thor-o-gram" is the final one of a campaign and contains tabulated results

Almost immediate cessation of reverts proved the wiseness of this policy.

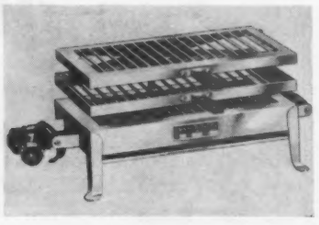
Thus it would appear that the stimulus furnished by added credit for ironer sales and the establishment of a demonstration service as an aid to salesmen were effective in producing the desired results with respect to ironer sales. Mr. McElroy states in this connection that the point method of setting quotas will probably be adopted universally over the company territory in future campaigns, and that an effort will be made to institute the ironer demonstration service in the small towns. He believes that in each town some local woman can be found who, having used an ironer for some time, has become proficient with it, and who will find time to carry on demonstrations at $2 each on the call of salesmen feeling the particular need of this assistance with the more difficult prospects.

New Mer

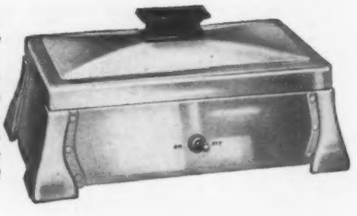
for

Brief, pictorial and comprehensive is the preview of holiday and gift electrical merchandise lines presented on this and the following pages for the active merchandiser who would profit from the season's best offerings

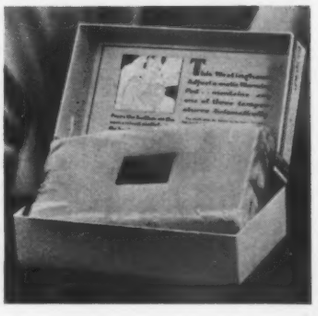
Three features are emphasized in a new toaster offered by the Majestic Electric Appliance Company, of San Francisco. The toaster makes two slices, evenly browned on both sides, at the same time. When the toast is ready, a shunt circuit allows it to remain in the toaster, hot, until ready to be eaten. A single knob operates both toast-timing and current control mechanism



Metal Ware Corporation, Two Rivers, Wis., have developed this electric sandwich toaster with expansion hinges for sandwiches of varying thicknesses



Two sandwiches or two slices of bread may be toasted on both sides at once in the Jewel Box toaster manufactured by Hewitt Electric & Manufacturing Company, Arlington, Mass. The toaster is of chromium plate. List price, $10



Three separate temperatures, thermostatically controlled, may be had with the Adjusto-matic warming pad made by the Westinghouse Electric & Manufacturing Company, Mansfield, Ohio. The pad is rose colored and is non-radio interfering

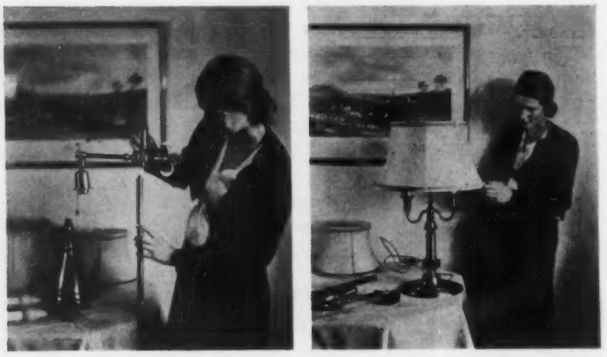
Electric Heating & Manufacturing Company, Seattle, features a portable electric air heater in bronze, nickel, or chromium finish. List price is $12.50 for bronze or nickel, $14 for chromium

WITH Christmas just around the corner, and the present the time for the ordering of stocks for the holiday trade, the electrical industry turns its attention to preparations for insuring its share of the shopper's Christmas dollar.

Electrical appliances—always well represented on the Christmas gift list—offer unusual appeal this year. Many new items have been devised by manufacturers to grace the dealers' displays and interesting improvements have been made in a number of former "best sellers."

ELECTRICAL WEST presents on these pages and those that follow many of the products that manufacturers are stressing for the Christmas season. Among these dealers in electrical merchandise should find suggestions for completing their holiday stocks, so that they may share amply when the Christmas buying begins.

Last year ELECTRICAL WEST assembled such a summary of Christmas merchandise lines for the first time. The response to this service was immediate, and many of our readers complimented the staff on helping them



U-Dezine portable lamps, created by The Miller Company, Meriden, Conn., give the owner an opportunity to construct easily any type of lamp desired. By buying separate parts, a table lamp may be changed to a bridge, bedroom, or any other variety by assembling parts provided. Wiring Connections are made automatically when the various parts are screwed together

chandise Christmas

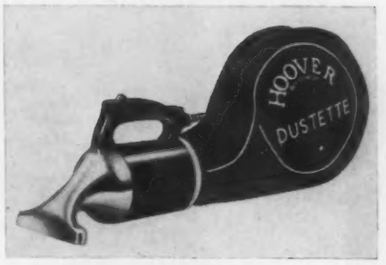
to order their holiday merchandise lines by this graphic method. This year even more appliances and devices have been submitted to the magazine by manufacturers who also saw the value of displaying their samples, as it were, in this attractive manner. Therefore, in order to present them all, the arrangement of them has been made more compact and complete. For their co-operation, the opportunity is taken here to thank those manufacturers who thus made this presentation possible.

Never have designs of clocks, table appliances and even the heavier utility articles been more pleasing. Never has the housewife been offered such convenience in the way of automatic cooking and labor-saving devices. The manufacturers are to be congratulated upon the beauty and utility of this year's electrical products.

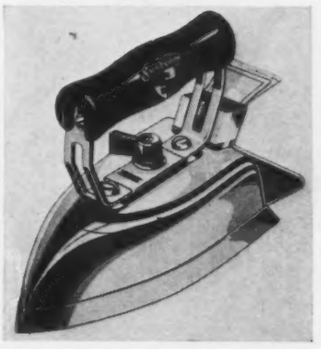
In line with the lowered prices of other commodities, prices of many of the articles shown are temptingly low. It can safely be said that the buyer of electrical appliances will get more for his money this year than ever before.

In the limited space available it has been possible to give only the briefest description of each article presented. But in each case the name and address of the manufacturer is given, and from the records on hand, the editors will be glad to give any additional details they have concerning a particular appliance, and to supply in most cases the name of the manufacturer's Western distributor. Many interesting items upon which manufacturers will expend particular sales and advertising effort during the Christmas season do not appear in this presentation, but this same information concerning Western distribution is probably on record and will gladly be supplied upon request.

This holiday wreath, made by the Noma Electric Corporation, 340 Hudson St., New York, is constructed of high-grade silk chenille roping. The three graduated candles, firmly fixed, hold C-9¼ intermediate base Mazda lamps. Trimmings are silvered holly leaves and berries, evergreen spray, and a real poinsettia flower. List price, including lamps, 6 ft. maroon silk cord, and 2-piece plug, is $4.25



Small and light in weight, the Hoover "Dustette" is designed for use in cleaning chairs, stair risers, car interiors, and similar arm-reaching dusting jobs. The Hoover Company, North Canton, Ohio, makes it to retail at $16.50

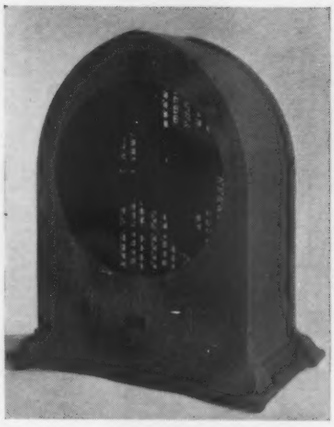


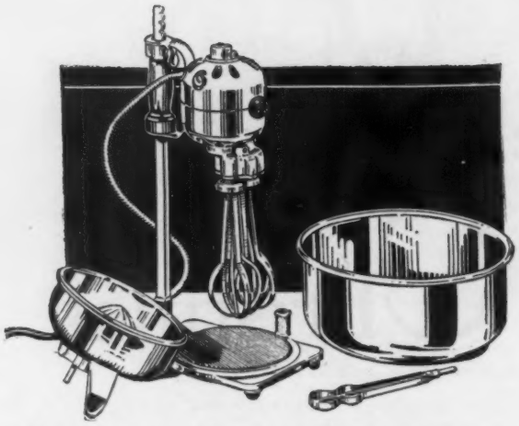
Features of the Sunbeam electric iron are the heavy-duty heating unit, air-cooled handle, trouble-proof indestructible steel plug, and the art steel fireproof case. Sunbeam irons are made for both 110 and 220 volts. Retail prices quoted by Chicago Flexible Shaft Company, Chicago, are from $3.75 for the 3-lb. iron to $7.50 for the 6-lb. iron

Among the exclusive features of the Rotarex electric cleaner are ease in cleaning parts, the divided nozzle to spread suction, removal of switch and cord by one screw, and an all-wood, insulated handle, quickly demountable. The belt runs out of the dust stream and does not interfere with cleaning tools. Rotarex is made by the Apex Electrical Appliance Company, Cleveland, and distributed in the West by The Johnson Washer Company, Oakland, Calif.

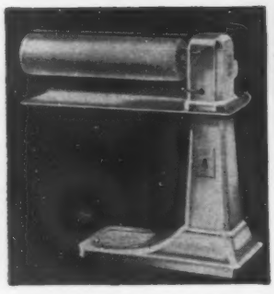
Artlarm, popular-priced electric clock manufactured by The New Haven Clock Company, New Haven, Conn., contains a new sub-synchronous, self-starting motor designed in conjunction with Westinghouse. Other features are the jumping second hand, beating accurate seconds, and silent micarta driving gear. List price, $7.95

Portable fan-type electric heaters have been developed by the Apex Manufacturing Company, Oakland, Calif., for the Christmas market. The heaters range in capacity from 1,250 to 5,000 watts, and employ a fan to give even distribution of heat at low temperature, a greater amount of heat being retained in the lower part of the room. List prices, $20 to $80





Not only is it useful as a mixer for cream, eggs, batters, etc., but through the use of a special attachment the new "Magic Maid," a Star-Rite product of The Fitzgerald Manufacturing Company, Torrington, Conn., may also be put to work as a juice extractor. Retail price is $19.50

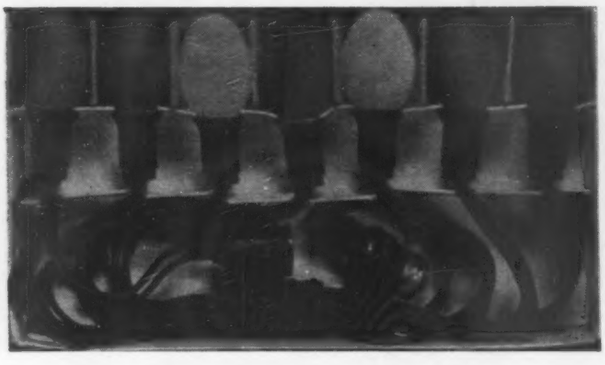


Homely beauty is contained in a practical electric ironer made by the American Ironing Machine Company, Chicago. Finished in ivory color with chromium plating, it stands less than 3 ft. high

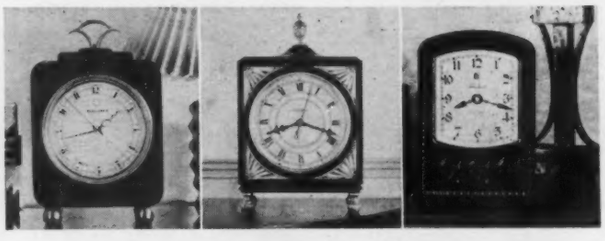
Percolators such as the Sunbeam models of the Chicago Flexible Shaft Company, Chicago, make good holiday merchandise. The percolator illustrated, fluted or plain, is finished in highly polished nickel. Retail prices range from $8.95 to $13.50

Improved models of Premier vacuum cleaners have just been announced by The Premier Vacuum Cleaner Company, Cleveland, Ohio, which claims a 50 per cent increase in cleaning power for the models. List prices are $37.50 and $60

Another of the new model electric toasters is that produced by the Trimble Manufacturing Company, 1241 Belmont Ave., Chicago. It is automatic and releases the toast when done. Current is turned on by inserting bread



This weatherproof outdoor lighting outfit is 13½ ft. long and is equipped with 10-watt Mazda lamps spaced 18 in. apart. Noma Electric Corporation, New York, manufactures these for outdoor decorative lighting

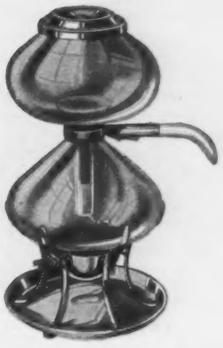


Telechrons in many new period and modern designs will be featured during the holiday season. These creations of the Warren Telechron Company, Ashland, Mass., range in price from $9.75 up

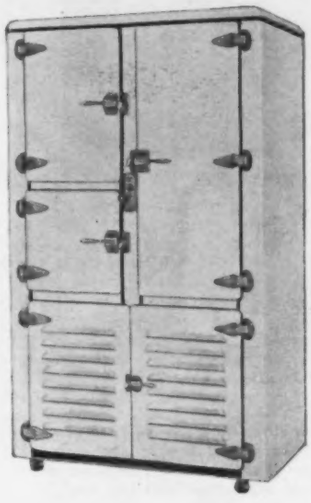
A practical and inexpensive toy electric range for the daughter of the house has been added to its line of electrical railroads for boys by The Lionel Corporation, 15 East Twenty-sixth St., New York

This small infra-red lamp may be carried from room to room for treatment for it weighs but 3½ lb. and is only 9 in. high. Especially adapted for doctors, it can be used by the layman as well. It is manufactured by the Chicago Flexible Shaft Company, Chicago

A fast selling article is this Warwick toaster made by the Robeson Rochester Corporation, Rochester, N. Y., to sell at $5.50. It makes two slices of toast at the same time, is finished in chrome plate, and has a mica-core heating unit.



Silex, a vacuum coffee maker, is made of Pyrex glass by the Silex Company, Hartford, Conn. It is a departure from staid methods of coffee preparation. Made in 4-, 6-, and 8-cup sizes

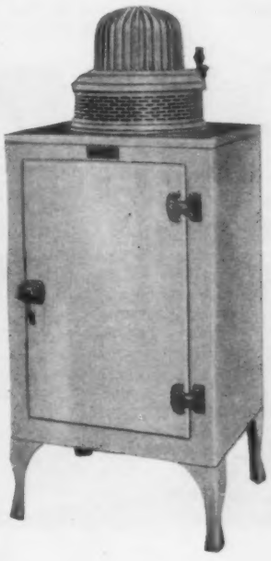


Electrically lighted refrigerators are among the Ice-O-Matic line manufactured by Williams Oil-O-Matic Heating Company, Bloomington, Ill. These refrigerators are made of steel with 3-in. insulation. The Crysteel model illustrated has 12½ sq.ft. of shelf area and freezes 108 small or 63 large ice cubes at one time

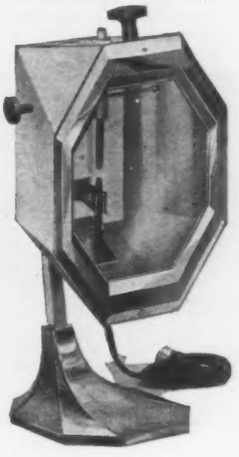
An adjustable, automatic Universal iron has recently been brought out by Landers, Frary & Clark, of New Britain, Conn. Heat may be regulated to any point between high and low by a handy dial

Hewitt sleeping blankets are designed to allow the owner full benefit of fresh air without exposure to cold. A full eight-hour night of use costs but a few cents. The blanket measures 66 x 80 in. Made by the Hewitt Electric & Manufacturing Company, Arlington, Mass. List price is $55

The mechanism for the Capitol Ice-O-Matic refrigerator may be mounted on top or below the box —or even in the basement to insure absolutely quiet operation. Nine sq.ft. of shelf space is provided in this model, priced at $175. It has a porcelain lined cabinet with lacquer exterior



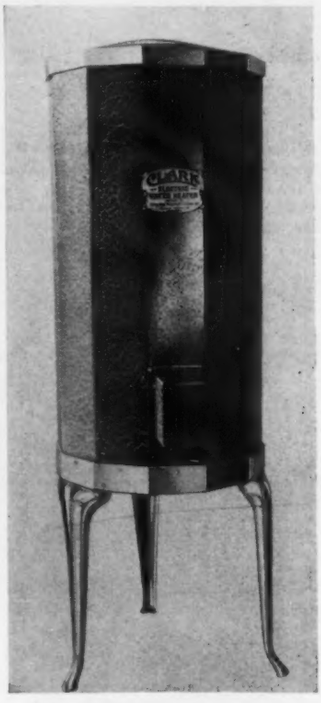
Artificial sunshine is produced by Master ultra-violet lamps, which may be procured in table or floor models. Each lamp is equipped with ten carbons and two pairs of goggles. The carbon arc formed in using the machine gives off the good effects of real sunlight, according to The Master Electric Company, 2309 Archer Ave., Chicago. List prices are $25 and $35



This Sunbeam toaster toasts any thickness from thin crackers to halved rolls or sandwiches. The toast need not be touched for turning, and it is removed by throwing the rack back away from the hot grill. Crumbs fall onto a tray below which snaps open and shut for cleaning. Retail price, $8. Made by the Chicago Flexible Shaft Company, 5600 Roosevelt Road, Chicago

This combination electric broiler and fryer attachment has been placed on the market by The Swartzbaugh Manufacturing Company, Toledo, Ohio, for use with the Everhot electric cooker. It has an open coil burner for broiling on one side and a "hot plate" for percolating coffee, etc., on the other, and can be fitted into the cooker with either side up. The manufacturer states that a thick steak may be broiled on both sides in three minutes with the broiler

A complete, self-contained storage plant for the home is the Multi-Cold refrigerator made by the Frigidaire Corporation, Dayton, Ohio. Normal dry cold, moist cold, below normal cold, and below freezing cold are all provided for various types of foods. The storage capacity of the model illustrated is 9 cu.ft. Retail price, f.o.b. Dayton, $475

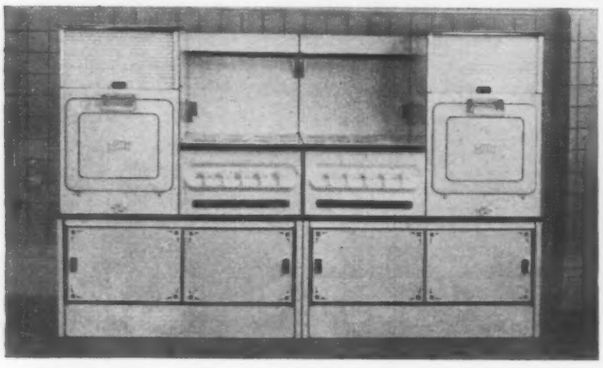


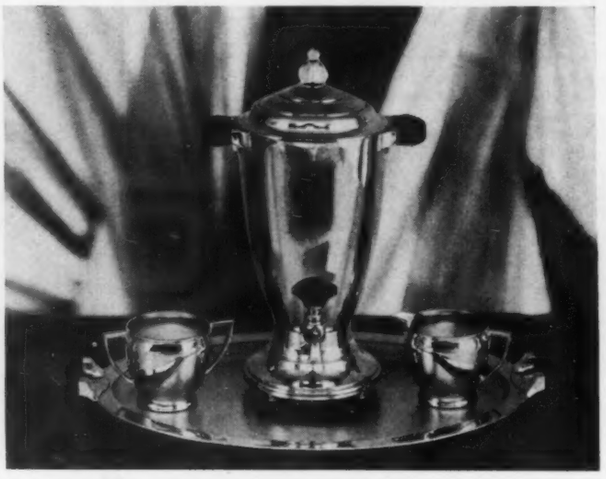
A water heater whose neat appearance warrants its installation in any office or room has been brought out by the Clark Electric Water Heater Division of the McGraw Electric Company, Omaha. The side walls and top are of black and gray crackle. All connections for pipes and wires are concealed in the base, so that when the heater is installed it looks as it does in the illustration at the right. General construction of tank, heating elements and control is identical with other standard Clark heaters

This sunshine health lamp offered by Graybar Electric Company, Inc., Graybar Building, New York, is equipped with four Everready carbons, No. 610, and four extra carbons are packed with each lamp, as well as a pair of goggles. "Supertan" carbons, which give a tan in from three to five minutes, are also available. Retail price, $49.50

Black handles of unusual design fitted to a compact, streamline body distinguish the new Covington urn of the coffee set shown below, made by the Westinghouse company, at Mansfield, Ohio. The urn is of eight-cup capacity, and is equipped with a Corox heating element, Spencer thrmostat, and drip-proof spigot

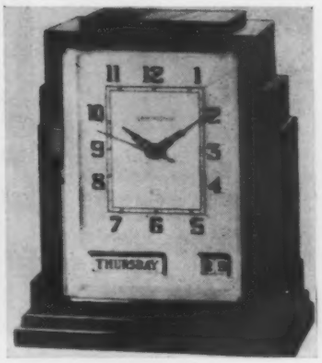
For finer homes requiring more cooking capacity than is provided by the average electric range, The W. J. Loth Stove Company, Waynesboro, Va., has designed this "twin de luxe" installation. It has two 16-in. ovens, six or eight surface units, two warming compartments, and cabinet base beneath. A choice of colors is offered





Urn, creamer and sugar basin of the Red Poppy urn set of the Robeson Rochester Corporation, Rochester, N. Y., are of Royalite china with chrome plated mountings, and the tray is chrome plated with satin finished center and bottom and highly polished rim. The urn has a 10-cup capacity. List price of the set, $33.25

An electric calendar that automatically changes at 12 o'clock midnight is a feature of the new Gregory model synchronous electric clock just announced by The Hammond Clock Company, 4115 Ravenswood Ave., Chicago. The clock case is of black Bakelite, 6½ in. high by 5¾ in. wide. Retail price, $12.50



Quick-Serv is a new electric double-grid cooker for toasting, roasting or grilling being marketed by the Star Manufacturing Company, Inc., St. Louis, Mo. A special roasting pan and four-egg rings are included so that the housewife can cook practically all foods on this one appliance. It has cast aluminum grids, and the frame, top, and base are made of pressed steel, chromium plated. Chromalox elements are used. A simple adjustment prmits the top plate to be held at any height, either over or just touching, but never crushing the food being cooked. Retail price, $22.50

A handsome waffle iron, chrome plated and with embossed top, is the Kenwood, made by the Robeson Rochester Corporation, Rochester, N. Y. Die cast aluminum grids permit the making of 7¼-in. waffles. A heat indicator shows the correct baking temperature. List price, $10.95

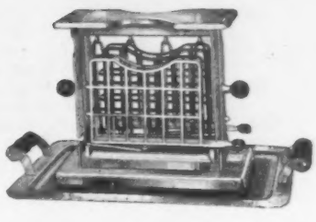
Gyrafoam water action, produced by a counter-sunk aluminum agitator, is a feature of this washer made by The Frederick Company, 100 West Monroe Building, Chicago. The washer's sturdy copper tub has a satin finish and is rust proof. An automatic drain board is incorporated in the divided roll wringer. A lifetime guarantee is given with this washer

The Radia health heater of The F. W. Shepler Stove Company, Pittsburgh, Pa., can be used not only as a room heater but as a health heater, much after the fashion of a health lamp, since it produces penetrating infra-red rays. It is of the pedestal base type, all nickel plated with chromium plated reflector, and can be swung into any position. Rated at 660 watts, the heater retails at $6.75

Clothes are soaked, washed, blued, rinsed, and dried for the line in one continuous operation in the new Aristocrat washer made by the Laundryette Corporation, of Cleveland, Ohio. The centrifugal rinsing process gives the clothes 1,800 fresh water rinses in 3 minutes. The clothes container whirls at the rate of 45 miles per hour, and hot water is forced through the meshes of the fabric by centrifugal force, removing all traces of soap. The Aristocrat is finished in a choice of Nile green, orchid, and antique ivory

This vibrating machine without a motor and with no moving parts or gears has just been placed on the market by The True Manufacturing Company, 4156 West Washington St., Los Angeles. The device is constructed as a magnetic unit, and is portable and can be hung on a hook at the wall. Included with the vibrator are a heavy durable belt of close-knit weave, a head cap for neck and scalp massage, and attachment hook. The machine uses only the current necessary to light a 60-watt lamp. Over-all dimensions are 8 in. long by 6 in. wide by 3 in. thick

The Torrid reversible toaster manufactured by The Beardsley & Wolcott Manufacturing Company, Waterbury, Conn., is provided with a tray which catches all crumbs. Complete with tray, the retail price in nickel is $4.95; chromium, $6.40



Westinghouse has brought out a popular priced 16-in. oven Flavor Zone range. Elimination of unnecessary flanges and the enamel finish make for easy cleaning. The clock is of distinctive design and provides full-automatic time control of the oven

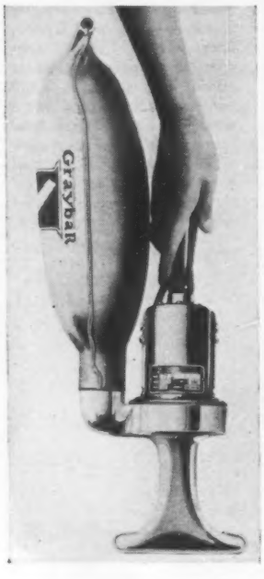
The body of the 8-cup urn in this Tuscan coffee set made by the Robeson Rochester Corporation, Rochester, N. Y., is built of solid copper. Urn, creamer and sugar, and 16-in. oval tray are all finished in chrome plate. The urn is 13 in. high, and has a non-drip faucet. List price of the set, $34.25

An eiderdown cover with rubberized inner surface that water cannot get through makes the new Sunbeam wetproof heating pad safe for either wet or dry applications of heat. The pad may be wrapped around a wet towel and the current turned on without danger of a short circuit. The pad has a 3-heat switch, and a separate white muslin slipcover is supplied to keep it clean. Retail prices, in two different sizes, $9.50 and $11.50

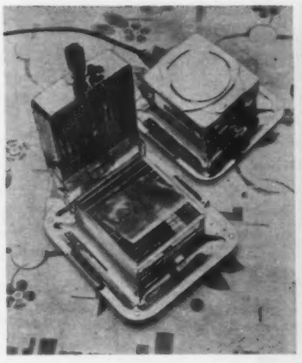
"Moderne" is an electric alarm clock recently added to the Kenmore line of clocks made by The Kodel Electric & Manufacturing Company, Cincinnati, Ohio. This timepiece has a Bakelite case, and its alarm is a pleasant, gentle, vibrating tatoo, which continues until shut off by a switch below the dial on the front of the case. List price, $14.50

Sunkist Jr. is the brother of the larger Sunkist electric fruit juice extractors used by soda fountains. It occupies only 8 sq.in. of space, and extracts a quart of juice in two or three minutes. Easily rinsed under running water, and rubber feet prevent scratching of any surface. Retail price, $14.95

By an ingenious arrangement, a batch of clothes can be drying in the spinning tub of this new Thor wringerless washer while another batch is being washed in the same tub at the same time. The new machine is noiseless and practically vibrationless, according to the Hurley Machine Company, Twenty-second St. and Fifty-fourth Ave., Chicago. Retail price, $99.75

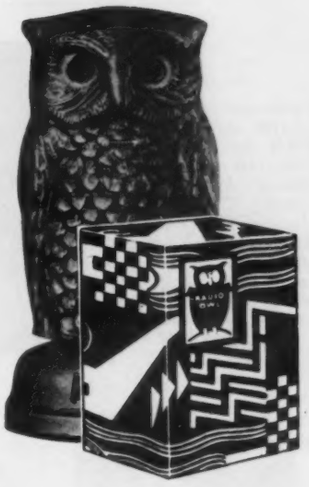


This Graybar handy cleanerette takes the place of cleaner attachments, yet is a complete cleaner in itself, consisting of a motor, short handle, self-supporting bag, nozzle, brush, and 15 ft. of cord. It weighs but 4 lb., and from the front of the nozzle to the tip of the handle it measures 14½ in. Nozzle opening is 4⅝ in. The bag may be removed and the cleaner used as a blower. A set of attachments for the cleanerette consists of a sprayer, a deodorizer, and a blower



The new toaster of the Proctor & Schwartz Electric Company, Philadelphia, is quietly automatic. It has thermostatic heat control, and a red light tells when the bread is browned. The Procor automatic "waffler" on the right also signals by a flash of ruby light when its grids are hot for baking and again when the waffle is ready. Retail price of the toaster, $12.50; waffle iron, $25

Radio Owl, a product of the Taylor-Travers Corporation, Ltd., 2201 East 51st St., Los Angeles, may be used to turn off automatically within a two-hour period any electrical appliance with a wattage capacity not exceeding 1,000 watts. By pressing the owl down, a piston is immersed in an oil chamber and electrical contact is made. A spring operates to raise the piston out of the oil chamber but is retarded in its effect by the viscosity of the oil



The Royal Chef is a new range just brought out by The Standard Electric Stove Company, Toledo, Ohio. Oven size is 18x18x14 in.; there are two three-heat burners and a large broiler above the oven. Both oven and broiler are aluminum lined. Complete time and temperature control are provided. The finish is white porcelain or a choice of colors with chromium plated trims, and construction is entirely boltless with concealed hinges

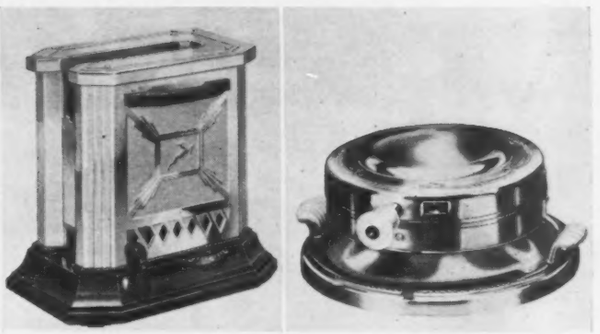
A log fire effect can be given an empty fireplace with the "Hearthlite" logs manufactured by Strait & Richards, Inc., Newark, N. J. Without giving heat, an ingenious arrangement of light, whirler and screen inside the pile of logs produces a vivid fire effect. The logs are designed for those situations where heat is not required but where the effect of a cheerful fire is needed

The new Grideliere made by the Majestic Electric Appliance Company, San Francisco, has reversible grids, one side for waffles and the other for pancakes, toasted sandwiches or French toast, and the grids can be easily removed for cleaning. A baking temperature indicator built in the dome of the appliance signals when the grids are at the proper baking temperature. Chromalox elements are used. List price, $18

This Empire toy range made by the Metal Ware Corporation, Two Rivers, Wis., has two heavily constructed side ovens and two separately controlled heating elements. Finished in a choice of colors with heavily nickel plated trimmings. Three cooking utensils are included. List price, $16.50

Voss Bros. Mfg. Company, Davenport, Iowa, offers a new model E-57 washing machine with floating agitator, Monel metal tub of large capacity, and large balloon-type wringer rolls. All movable parts are fully enclosed and running in oil

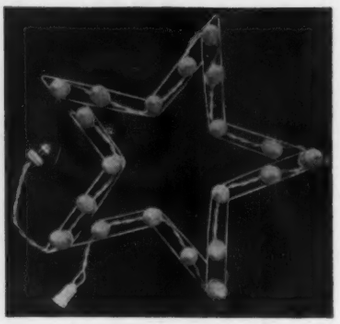
Utica electric portable heaters are offered in three models and five color combinations. The sides and bases of these heaters are always cool, making them safe for use where children are playing. Two single-heat models have capacities of 660 watts and 1,000 watts, and a three-heat model gives heat control of 300, 700 or 1,000 watts as required. Prices range from $10 to $15. Made by Utica Products, Inc., Utica, N. Y.



The Hotpoint "oventype" automatic toaster makes toast for anyone's individual taste. It toasts both sides of the bread at once, and shuts off automatically when the toast is done. The current need never be turned off or the plug pulled out as long as the Chastleton Hotpoint waffle iron is in use. Both are products of the Edison General Electric Appliance Company, Chicago. List price of the toaster, 12.50; waffle iron, 14.50

Proctor & Schwartz Electric Company, Philadelphia, offers a Golden Glow heater, finished in bronze or color, that retails for $5.65. Twin hot plates, of various wattages, range in price from $7.45 to $11.65. The automatic iron with a 250-deg. heat range, has a unique heat control dial marked for ironing different fabrics

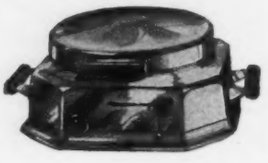
Twenty intermediate base sockets and white Mazda C-9¼ lamps are used to form this Christmas star offered by the Noma Electric Corporation, 340 Hudson St., New York. An extension connector attached to a 3-in. lead permits one design to be easily joined to another. List price, complete with lamps, $13



A portable electric heater for the fireplace, made by The F. W. Shepler Stove Company, Pittsburgh, will provide ample heat for a room of from 1,000 to 1,200 cu.ft. The heater uses two Globar heating elements and has a rating of 1,320 watts. List price, $22.50

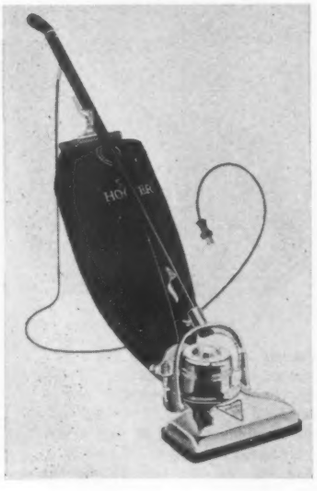
A two-slice model of the Toastmaster of Waters-Genter Company, 213 North Second St., Minneapolis, has two oven slots and toasts two slices of bread both sides in about 1 min. 15 sec. It is operated by a single lever, and is practically noiseless. Retail price, $17.50

The new Waffle Master of Waters-Genter has automatic control of high and low heat. A pilot light indicates when the iron is hot enough for baking, and announces when a waffle is finished by turning from bright to dull red. There is a removable batter ring for cleaning. Total height, 4½ in.; list price, $17.50

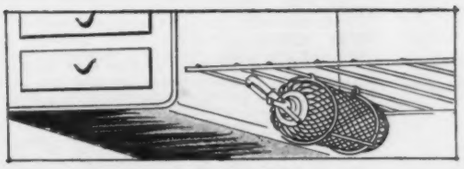


The entire mechanism is contained in the handle of this one-piece violet-ray outfit for home use made by The Master Electric Company, 2309 Archer Ave., Chicago. The handle is shockproof and is made of polished hard rubber. Complete with carring case, general, comb, and metal electrodes, the retail price is $12.50

The lithographed cut-out window display shown below has been prepared by the Lionel Corporation, 15 East Twenty-sixth St., New York, for distribution to the retail trade for the holiday season. It is brightly colored and is of sturdy cardboard construction—39 in. at the base, and 36 in. high to the top of the engineer's head

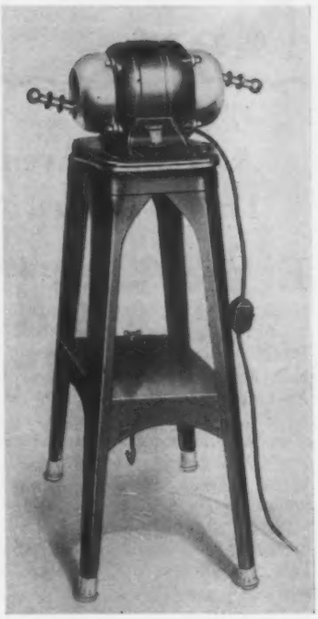


This is the standard household size Hoover cleaner, retailing at $79.50. There is a lower-priced household size at $63.50, and a larger model at $142.50 for use where there are large areas of heavy-pile carpeting to clean. All three models employ "positive agitation," as well as sweeping and air suction cleaning, and all have ball-bearing motors

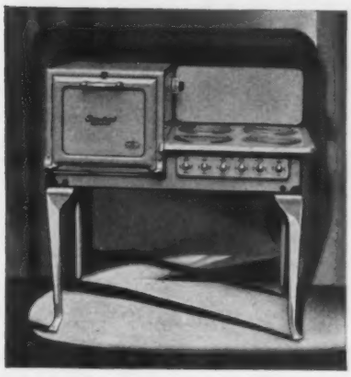


By means of a double suspension ring developed by Sparklets, Inc., 19 West 44th St., New York, a permanent place is found in any electric refrigerator for the Sparklet syphon. The device is made an integral part of the refrigerator shelf by firmly clinching two hooks at the top of the suspension ring to a rung of the shelf. The syphon can be used to carbonate ice cream, waffle batter, etc., as well as for making root beer, ginger ale, orangeade, and other drinks

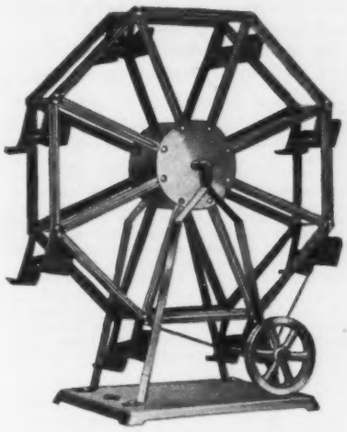
An electrically welded table has been provided by the Graybar Electric Company, Inc., for its Stimulator. An anchor rod holds the table firmly to the floor or baseboard, and the Stimulator is fastened securely to the table top by two bolts. Rubber feet protect floors and rugs, and a shelf provides a convenient place for the belts. Particular attention has been given to the design and appearance of the Stimulator. Base and motor have unusually graceful lines and are finished in a rich walnut. The shroud housing is polished aluminum and all other metal parts are nickel plated and polished. Mounted on the table, the outfit occupies a floor space 12 x 15¼ in. and is 30⅜ in. high



Graceful lines and futuristic pewter spouts give distinctive "eye appeal" to new seven- and nine-cup percolators of the Rome Manufacturing Company, Rome, N. Y. Features of the new line are a body and breast of one-piece solid copper, large cover hole making for easy cleaning, forged spigot on urn, fast initial percolation, and a pump with no moving parts. The seven-cup percolator retails at $8.75; the nine-cup at $9.25



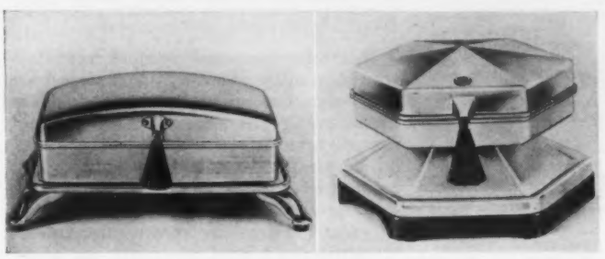
To sell in the low-priced field, The Standard Electric Stove Company, Toledo, Ohio, offers its Crieftain range finished in white porcelain enamel or colors. The Chieftain has four full-sized three- heat hotplates and its oven, measures 16 x 14 x 18 in. and has temperature control



With the new Empire ferris wheel now being marketed by the Metal Ware Corporation, Two Rivers, Wis., any boy can become manager of one of the most fascinating rides in an amusement park, on which he can carry tin soldiers or small dolls. This wheel is a miniature model of the big ferris wheels; it stands 15 in. high, has eight swinging carriages, and is attractively finished in red duco, with nickel plated running parts

Much of the dignity of contour of a fine old Russian samovar has been reproduced in the Menlo Siphonator created by the Edicraft Division of Thomas A. Edison, Inc., Orange, N. J. The Siphonator makes nine breakfast cups of coffee by the popular drip method, strong or weak as desired, and the second spigot turns on hot water to dillute it to individual taste. The Siphonator, finished in chrome, is priced at $45; $87.50 complete with sugar basin, creamer, and tray

The new Edicraft waffle baker and sandwich grill produced by Thomas A. Edison, Inc., Orange, N. J., both have the Edison Birka heat regulator which insures correct and automatically sustained heating temperatures. An indicator on top of the waffle baker tells when it is time to pour in batter for the first waffle. The grill toasts two sandwiches at once, and an extra deep plate with a grease drain is provided for broiling steaks, chops or bacon right at the table. Retail price of the grill, $18.50; waffle maker, $23.50



News

A.I.E.E. Convention at Portland Draws Record Attendance

ESTABLISHING an attendance record for Pacific Coast conventions of the American Institute of Electrical Engineers conducted in the Pacific Northwest, the recent convention held at the Multnomah Hotel in Portland, Sept. 2-5, was a fitting climax to the months of hard work put in by members of the Portland Section. All Pacific Coast sections of the Institute were represented at the convention as shown in the accompanying tabulation.

Among those attending from the East were F. L. Hutchinson, national secretary, H. H. Henline, assistant national secretary, and W. S. Lee, president of the Institute.

Highlights of the papers presented at the various sessions are outlined briefly in the following paragraphs.

Transmission Session

From a cost standpoint it is impossible to obtain adequate insulation for high-tension transmission lines by the use of porcelain insulators alone, according to A. O. Austin, Ohio Insulator Company, speaking on "Wood Arms on Steel Structures."

Some of the advantages of this wood-and-steel type of construction as stated by the speaker are:

1. High effective flashover voltage for transients.
2. High effective flashover for a given insulation cost.
3. Reduced vertical clearance and conductor spacing in a two-circuit tower for the same effective flashover voltage.
4. Decreased height of tower and top conductor in two-circuit tower for a given flashover voltage, reducing cost and lightning hazards.
5. Closer spacing of conductors with lowered line reactance, increasing the maximum kilowatts which may be delivered per circuit.
6. Increasing charging current due to a closer conductor spacing, thereby reducing the required synchronous condenser capacity.
7. Elimination or greater reduction of bird trouble.
8. Provision of a method for greatly improving the insulation of existing lines at low cost.

Among the disadvantages, the speaker listed:

1. Greater depreciation than all-steel construction.
2. Greater difficulty in obtaining very high strengths in the structures.
3. Possibility of shattering under lightning.
4. Possibility of burning from leakage or charging currents.
5. Higher cost for wooden arms than for steel crossarms.

Discussion covering Mr. Austin's paper emphasized the fact that while the evidence shows that highly insulated lines seem to be immune to everything except direct or branch strokes, the use of wooden arms on steel tower transmission line construction should be considered as a valuable experiment rather than a definite conclusion because such a great deal remains to be learned about the inherent characteristics of lightning and their effects upon transmission systems.

In discussing the many different factors entering into the determination of the protection factor achieved by adding overhead ground wires to transmission lines, L. V. Bewley, General Electric Company, discussed at some length the effects of reflection and refraction at towers of waves imposed both upon ground wires and line wires. He presented a most unique and comprehensive graphical method for analyzing the complicated intermingling waves. His method consists of a lattice diagram which is comparatively simple to prepare and through which he can trace the history and development of a transient wave at any given tower point.

An experimental investigation of the influence of polarity on high-voltage discharges was discussed by Profs. F. O. McMillan and E. G. Starr, Oregon State College, in their joint paper. They gave particular attention to such discharges used in high-voltage measurements. They developed a theory of the formation of Lichtenberg figures together with supporting experimental evidence which described a polarity indicator, utilizing visual Lichtenberg figures.

Among the conclusions which the professors' experimental work has enabled them to arrive at, are the following:

1. Lichtenberg figures are produced by ionization phenomena at the surface of the recording medium and are visible in a darkened instrument.
2. The positive figure is extended in size by the positive space charge surrounding the recording electrodes. The negative figure is held to a relatively small size by the positive space charge adjacent to the electrodes. The existence of these space charges is clearly demonstrated when figures of opposite polarity are quickly superimposed.
3. Tests with different types of gaps showed that polarity has a pronounced effect upon sparkover period.
4. The point-to-plane gap at a given spacing sparks over at a much lower voltage when the point is positive than when it is negative, except possibly for very small spacings. This characteristic is typical of all gaps having dissimilar electro-gradients when local breakdown precedes sparkover, and is due to the space charge extending the field of the higher gradient electrode when positive, and suppressing the field when negative.
5. Pin-type insulators spark over at a lower voltage when the line is positive than when the line is negative because of local breakdown occurring first on the line itself. The impulse ratio is lower positive than negative.
6. Grounded sphere gaps spark over at the same voltage with ungrounded spare positive or negative up to spacings of approximately $1.6 \sqrt{R}$.
7. Grounded sphere gaps spark over at a lower voltage negative than positive at spacings ranging between approximately $1.6 \sqrt{R}$ and well above diameter separation. This characteristic is due to high local negative gradients caused by the negative electrodes' positive space charge.
8. At wide spacings the grounded sphere gap sparks over at lower voltages positive than negative (4).
9. At near diameter spacings, grounded sphere gaps spark over at a much lower impulse voltage negative than positive. The shape and duration of the impulse wave probably have a pronounced effect upon this difference.

A most comprehensive and illuminating mathematical description of the methods of calculating mechanical performance of typical rotary-type oil circuit breakers operated by a spring-actuated motor control was given by A. C. Schwager, Pacific Electric Manufacturing Corporation. Through the application of his method the author has been able to predict with great accuracy the time required for breaker operating parts to reach any particular operating position for any given spring characteristic and to predict accurately the speed at that same particular position. He developed numerous formulas and presented results of a mechanical test which showed results following remarkably closely the pre-calculated and predicted results.

Comprehensive laboratory tests to determine the relative transmission efficiency of various types of 220-kv. transmission conductors were described jointly by Prof. J. S. Carroll, Stanford University, and D. P. Dinapoli, Pacific Gas and Electric Company.

In the opinion of the authors the results of the tests showed conclusively that:

1. The corona loss on new, clean conductors is the same for copper as it is for aluminum.
2. The effect of weathering of the conductors as received from the factory was such as to decrease corona loss while the effect of weathering of the new conductors after washing was to increase corona loss. (Different conductors were carefully scrubbed to assist in the determination of the possible effect of weathering or corrosion.)
3. Corona loss over the operating range of voltage of the 220-kv. line is affected only slightly by a considerable change in conductor spacing or configuration or clearance to ground.
4. Until further tests are made the use of strands as large as those of the 1-in., single-layer, hollow copper conductor for 220-kv. line will be questionable.
5. With the loss on the washed 0.91-in., hollow concentric copper conductor very low at 229 kv., the use of such cable is not recommended for a 220-kv. line because there is not sufficient margin to allow for the increased loss at higher altitudes or for the accumulation of dirt.
6. Losses on a rope-lay conductor are greater than for a concentric-lay cable of the same diameter.
7. The amount of decrease in corona loss by washing a new conductor would seem to justify the removal of the grease from the conductor at the factory rather than to wait for weathering to do this at considerable loss of power in the meantime.

Discussion on this subject revealed the possibility of utilizing corona loss characteristics of a transmission line to advantage in attenuating traveling waves resulting from lightning and other serious disturbances. Other comment was to the effect that the size of strands in transmission conductors is of great importance from a mechanical standpoint as well as from an elec-

trical standpoint. Further, it was suggested that there is a possibility of the future use of relatively large conductors on transmission lines in closely built-up areas in order to reduce possible radio interference.

K. A. Hawley, Locke Insulator Company, was not present to present his paper covering the discussion of the development of the porcelain insulator. In his paper Mr. Hawley pointed out that recent experiments have eliminated stresses and consequently assured longer-lived porcelain, and that the elimination of the abutting joints and the proper design of the cemented joint has stopped expansion troubles.

Power Station Session

Fundamental factors entering the problem of providing additional steam plant capacity for the system of the Pacific Gas and Electric Company were presented and discussed by R. C. Powell of that company. As constituted at present the operating system of the Pacific Gas and Electric Company and its subsidiaries amounts to an interconnected system covering an area roughly 425 miles long and 150 miles wide through the central and northern part of California. The system demand now amounts to about 850,000 kw. and the annual power generation is on the order of 4,500,000,000 kw.-hr. Out of a present generating capacity of some 1,100,000 kw., about 300,000 kw., or roughly 30 per cent, is in steam-electric plants.

The author also emphasized the system operating demand which requires two types of generating units, one of which must be designed for highly efficient operation on the basis of base load, and the other of which must be designed to operate economically under conditions of peak load service and for reserve or standby capacity. A third type of capacity in generating plants was mentioned by Mr. Powell as a requisite on the P. G. and E. system, and that was generating capacity that could be called upon for a period of a few months during the abnormally dry years that occur in approximately seven-year cycles. To provide for this extreme emergency capacity, the Pacific Gas and Electric Company has evolved the policy of retaining its older and less efficient plants in sufficiently good condition so that they can be prepared for actual service without too great a delay when needed.

Normal peak and normal reserve capacity are considered to be provided for through the availability of the so-called overload range of both turbines and boilers. The company's decision is to the effect that it is cheaper to allow the lowered operation efficiency that results from heavy overloads and to stand the increased maintenance cost than to provide capacities that normally would stand idle for a large part of the time.

In connection with the high-pressure steam installation being made by the Pacific Gas and Electric Company, the author outlined briefly the economic reasons for the selection of 1,250-lb. throttle pressure and 750-deg. F total steam temperature to be used at this plant. He also outlined briefly special equipment which will go into the plant and which is expected to result in a fuel efficiency of 12,000 B.t.u. per kilowatt-hour or better.

President Lee, in discussing Mr. Powell's paper, touched upon investigations made under his direction by the Duke Power Company which had showed that with their fuel as bituminous coal at around $4.25 a ton the best operating economies were to be achieved with the use of only 450 lb. steam pressure as against the 650-lb. and 1,250-lb. pressures that had been experimented with.

Discussion on costs per kilowatt of steam plants brought out the fact that at the latest plant of the Duke Power Company the total installation cost amounted to $67.25 per kilowatt including some provision for future enlargement. Mr. Powell stated that cost figures of his company were comparable, being $64 per kilowatt for standby service in Station C in Oakland and to the same for base load service in Station A with high-pressure equipment.

The question of grounding transformer bank neutrals through neutral impedances and the resultant transient condition in the windings was discussed by F. J. Vogel, Westinghouse Electric & Manufacturing Company, Sharon, Pa. As a result of his investigations, Mr. Vogel has come to the conclusion that:

1. Transformers with isolated neutrals are subject to transient voltages of a higher order from lightning surges throughout the windings and at the neutral and require full insulation to ground for the entire winding.

2. If the transformer has the neutral grounded through a resistance of not more than 400 or 500 ohms, the internal transient voltage stresses exceed those for solidly grounded neutrals by only a small percentage. Therefore, in general, the same rules apply regarding the grading of the insulation to ground as apply for solidly grounded neutrals, taking due account of the dynamic rise in voltage due to short circuits.

3. The drop in voltage across a neutral resistance is not in phase with the transformer impedance drop. A large value of resistance is required to limit the current to a given value and consequently a higher voltage appears at the neutral than when the neutral is grounded through an inductance.

4. Transformers with the neutral grounded through a reactor may be subjected to high oscillatory voltages due to lightning, and unless some means be provided for reducing this voltage the transformers must have full insulation.

5. Transient voltage resulting from lightning surges in transformer windings grounded through a reactor can be reduced to within a small percentage of that with solidly grounded neutral, and the voltage at the neutral maintained at a safe value, by shunting the reactor with resistance, with a safety gap, a lightning arrester, or with an auxiliary resonant circuit.

6. In order to obtain the desired characteristics with a shunting resistance, the resistance must absorb a relatively large amount of energy which may result in its having proportions comparable to that of a reactor.

7. The use of safety gaps appears undesirable because of the possibility of maintaining the transient arc when the system is operating under short-circuit conditions.

8. Lightning arresters offer advantages in that they have low impedance to lightning transients of high amplitude and practically infinate impedance to the short-circuit current. They are a standard piece of apparatus, relatively small in size and easy to apply, requiring only a knowledge of the short-circuit voltage drop across the reactor.

9. An auxiliary resonant circuit offers an effective means of reducing and maintaining the transient to a relatively low value, approximately that with solidly grounded neutral, and at the same time offers a high impedance to normal frequency current.

N. B. Hinson, Southern California Edison Company, Ltd., presented a paper by E. R. Stauffacher of that company which described the development of a protective relay system for the Edison company's transmission and major distribution system. In his paper Mr. Stauffacher described both the 220-kv. and 66-kv. systems of his company and mentioned briefly the 16-kv. and 11-kv. applications.

Based upon operating records of his system, Mr. Stauffacher arrived at the following conclusions:

1. In the interest of assuring the most reliable performance of protective relays on the 220-kv. transmission system, under conditions of testing and overhauling the protective equipment as well as during normal operating conditions, duplicate sets of relays have been installed. This permits full protection to be retained at all times.

2. Use of carrier-current pilot protection on one section of the Vincent 220-kv. transmission line has been satisfactory and has shown the value of this form of protection under conditions which would not permit the use of other forms of protective relays.

3. Use of current-balanced relays and radial lines between the 220-kv. major receiving stations and the 66-kv. distributing stations has been an improvement over the previous practice of looping through the 66-kv. stations between adjacent 220-kv. stations. Elimination of the necessity of depending upon power-directional relays progressively timed has reduced the time required to clear faults.

4. The practice of looping 16-kv. and 11-kv. distribution stations between 66-kv. stations in place of the previous practice of using single radial lines also has resulted in a marked improvement in service.

5. The use of a remote alarm between unattended and attended stations to indicate when an oil circuit breaker trips out at the unattended station has reduced the time of outage considerably in rural districts. Private telephone lines or carrier-current equipment coupled to the transmission line permits the installation of this remote alarm at a reasonable expenditure.

Research investigations conducted by engineers during the past few years have resulted in notable improvements of the mercury-arc rectifier, according to statements made in a paper pre-

Portland A.I.E.E. Convention Attendance

Section	Men—Members and Guests	Women Guests
Vancouver	4	0
Seattle	28	8
Portland	88	38
Spokane	13	7
Utah	4	3
San Francisco	41	3
Los Angeles	17	10
West, miscellaneous	23	1
East, miscellaneous	10	3
Total	228	73

sented on the subject by O. K. Marti, of the American Brown Boveri Company.

Mr. Marti has arrived at the conclusion that the mercury-arc rectifier can be used to advantage for any power application requiring conversion from alternating to direct current. Because of its ease of generation and conversion, alternating current has achieved an advantage over direct current and now is being used for applications where direct current would be preferable, according to the speaker. Since the advent of the mercury-arc rectifier, however, the speaker stated that the use of direct current has received a considerable impetus and no doubt will gain additional momentum in the future.

Communication Session

Wednesday afternoon's session was devoted to communication subjects.

In his discussion of commercial aircraft radio-phone communication, R. H. Freeman, Boeing Air Transport, Inc., Seattle, was enthusiastic over the importance of two-way radio communication aircraft and stated emphatically that the results obtained from his system of two-way radio-phone communication had more than justified the time and expense involved in its installation.

The installations with which the speaker is most familiar is that recently completed on the 1,943-mile San Francisco-Chicago line, and the 1,200-mile Seattle-San Diego line of the Boeing system.

A paper prepared by Messrs. F. E. Terman, D. E. Chambers, and E. H. Fisher, of Stanford University, on the subject "Harmonic Generation by Means of Grid Circuit Distortion" gave the mechanism of operation and included a discussion of the effective circuit conditions on the operation of the grid distortion generator. Oscillograms and harmonic spectra were included.

As a result of their investigations the authors have arrived at the conclusion that the grid-distortion method of generation is definitely superior to the usual plate distortion method in respect to:

1. Power that can be obtained on a desired harmonic particularly when this is a high-order harmonic.
2. Power that can be obtained simultaneously on a large number of harmonics.
3. Steadiness of output on a particular harmonic frequency.

They state that the power developed by the grid-distortion generator at a given harmonic ordinarily is at least ten times the maximum value obtained from the plate distortion method and in some cases will be more than a thousand times as great.

In presenting a paper covering the communication system of the Southern California Edison Company, Ltd., R. B. Ashbrook and F. B. Doolittle of that company gave a general description of the company's communication system which has been designed to meet not only the requirements of load despatching but also to serve to bring about close co-operation between the outlying district forces and their directing heads at division headquarters and in the general office. Decentralized despatching, which makes possible the restoration of service after an interruption without the immediate need for communication, was touched upon. Details of the development and construction by the company of the "Serjdetour" arrester was made public for the first time and created quite a bit of interest and comment.

As a result of operating experience and extensive tests and investigations the authors came to the conclusion that by proper attention to co-ordination and maintenance of good balance, communication lines of a power company may be highly satisfactory in spite of their severe exposure to inductive interference. They concluded further that the "Serjdetour" arrester and its associated equipment provides a protective scheme which will maintain continuity of service in spite of power surges of magnitudes ordinarily encountered and will protect inside equipment from damage in the extreme case of actual contact between telephone lines and power lines. Original testing and maintenance of lines to the original standards by subsequent routine tests keep the facilities in first class condition.

Research and Development Session

In a paper covering the Pennsylvania Railroad electrification, J. V. B. Duer explained briefly the reasons for the decision to embark upon this extensive electrification program which constitutes a project covering a passenger and freight service of 325 miles of line and 1,300 miles of track extending from Hell Gate bridge in New York west and south to Wilmington, Del., and west on the main line in the direction of Harrisburg, Pa. This program is to be carried out progessively over a period of years and the immediate factors which influenced the decision to proceed with the electrification work were given by the author as follows:

1. Greater economy of electric traction as compared with steam operation in dense traffic territory.
2. Growth in the southern passenger business.
3. Increasing density of both freight and passenger business on Eastern lines of the Pennsylvania Railroad and the probabilities that in the future more rapid movement might be required.
4. Desirability of utilizing the advantages of electric traction in connection with the construction of a new passenger terminal in Philadelphia and in Newark, N. J.
5. Desirability of building a locomotive that would meet the requirements from the standpoint of weight of train, speed and reliability that are believed to be required in the next 20-year period in the territory involved.
6. Probability that the project could be completed at less expepditure, all matters considered, than if it were to be started at a later date.

The use of electricity in a process where charcoal, oil, and gas long had been the only accepted sources of heat was discussed in a paper entitled, "An Electric China Firing Kiln," by George S. Smith, University of Washington. The author reported that results obtained in experiments seemed to indicate that the use of electric energy as a source of heat in firing painted china has many advantages if not every advantage over all other types of heat. He described his kilns, both an early model and a more recently completed one, and gave the results of tests involving an appreciable amount of experimental work both in constructing the kilns and in operating them during the test period.

A. F. Gorton, of the Scripps Institution of Oceanography, La Jolla, Calif., presented a paper entitled, "Attempts to Forecast Seasonal Precipitation in California and Its Relation to Hydro-Electric Power Production." An article by Dr. Gorton on this subject was published in the Sept. 1 issue of Electrical West, and hence no summary of his Institute paper is repeated here.

A description of the electrification of the world's largest open-cut copper mine, the Utah Copper Mine, was given in a paper presented by R. J. Corfield, Utah Copper Company. Electrification of this project was an economical and progressive step in copper mining and it developed interesting engineering problems. Electric shovels, both alternating and direct current, were required for this particular job along with a special type of electric locomotive and an elaborate trolley and feeder system adequate to serve a fleet of 23 electric shovels and 39 electric locomotives scattered over a 725-acre area, and on several different levels along a mountain side.

Student Sessions

Two intensely interesting student sessions were held as a part of the regular convention program and the following papers were presented and discussed:

"A Visual Lichtenberg Figure Voltmeter," by Lowell Hollingsworth, Oregon State College, Corvallis, Ore.

"A New Synchronous Switch and Transient Visualizer," by Leon Olberg, University of Washington, Seattle.

"The Development of an Oscillation Transformer or Tesla Coil," by Lloyd E. Steele and H. R. Garrison, University of Washington, Seattle.

"Transients on Disconnecting Short-Circuited Induction Motors and Air Core Inductances at Low Power Factors," by C. L. Black and E. C. McCarter, University of Southern California, Los Angeles.

"Heat Conduction From Underground Cables," by William Warren, T. Seina, and G. Vukota, University of Santa Clara, Calif.

"A Vacuum Tube Wattmeter," by George W. Barnes, Oregon State College, Corvallis, Ore.

"Application of the 224 Vacuum Tube to Radio Frequency Amplification," by Elmer P. Gertsch, University of Utah, Salt Lake City.

"Characteristics of Transformer Coupled Audio Frequency Amplifiers," by Owen E. DeLange and Wayne L. Shaw, University of Utah, Salt Lake City.

"A Rapid Method of Measuring Loud Speaker Response," by C. R. Skinner, Stanford University, Palo Alto, Calif.

"Linear Conductors as Radio Directors and Reflectors," by Leonard J. Black, University of California, Berkeley.

"The Inhibition of Corrosion by Electrical Means," by C. E. Cherry, University of California, Berkeley.

Los Angeles Power Bonds Cut to $13,300,000

Following the action of the Board of Water and Power Commissioners in unanimously adopting a resolution requesting the City Council to place a $13,300,000 power bond issue on the Nov. 4 ballot, E. F. Scattergood, chief electrical engineer and general manager of the Bureau of Power and Light, made the following statement:

"Provision for financing certain of the items heretofore included in the previously proposed $19,000,000 power bond issue is to be temporarily deferred. The principal items to be eliminated from the power bond issue as originally outlined (ELECTRICAL WEST, Sept. 1, 1930, p. 146), are those providing for the construction of a transmission line from Owens Valley and of the power plants on Big Pine Creek which it was the intention of the department to build at this time."

The power construction program adopted by the Board of Water and Power Commissioners provides for the expenditure over the three-year period ending 1933, of $25,500,000. Of this sum $12,200,000 will be provided from the surplus revenues of the Bureau of Power and Light, the remaining $13,300,000 being provided from the bonds to be voted on Nov. 4.

The extensions and betterments provided for will consist primarily of the completion of power plant No. 2 in San Francisquito Canyon and minor betterments to other existing power plants; additions to the capacity of existing central receiving stations and the addition of one central receiving station on the west side and necessary high tension connection lines; additions and betterments to the general distribution system in the city including local distributing stations and local overhead and underground lines and services; and $2,000,000 for the purchase of rights of way for transmission from the Boulder Canyon project to Los Angeles.

Dr. John R. Haynes last month officially took the oath of office as president of the Board of Water and Power Commissioners for the ensuing year. Dr. Haynes had been re-elected president of the board on July 26. Last month the board unanimously reaffirmed its July election of Dr. Haynes when it was pointed out that Dr. Haynes, whose term on the board expired on July 1 of this year, had on July 26 not yet been reappointed to the Water and Power Commission by Mayor Porter.

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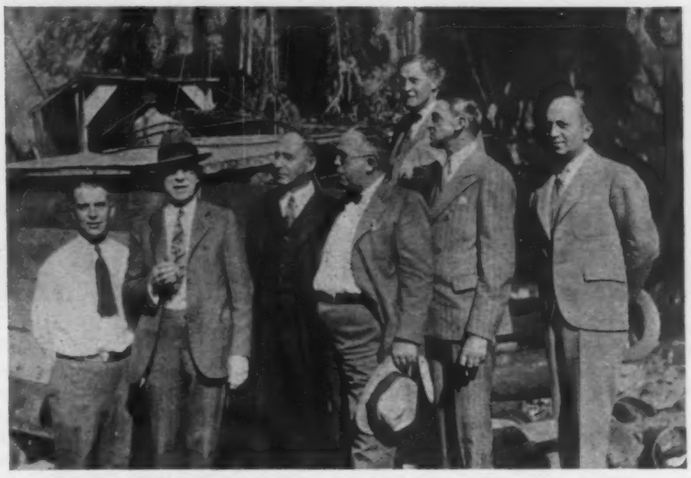
LICENSE GRANTED FOR KLAMATH RIVER PROJECT—License for a hydroelectric project on the Klamath River in Oregon was authorized by the Federal Power Commission at a meeting held Aug. 27. The development will involve an ultimate installation of 283,000 hp., and construction work on the first unit (50,000 hp.) to cost approximately $5,000,000, will be started as soon as necessary arrangements can be made.

Box Canyon Dug to 110 Ft. Below Sea Level at Ariel Dam Site

Final excavation of the "Glory Hole" at the Ariel dam site on the Lewis River in southwestern Washington was completed by the Phoenix Utility Company which is constructing the dam for the Inland Power & Light Company, Portland, during the week of Sept. 7.

The "Glory Hole" gets its name from the fact that bed rock of the box canyon, through which the Lewis River once flowed, was found by preliminary investigation to rest 110 ft. below sea level.

The constant-angle arch dam is to contain 350,000 cu.yd. of concrete of which approximately 150,000 now are in place. Its lowest point is at El. —60 and its crest will be at El. 240, giving a normal operating head of 185 ft. The 12½-mile lake resulting will provide a useful storage of 232,000 acre-ft. with a draw-down of 60 ft.



Officials of the Northwestern Electric Company, Inland Power & Light Company, and Phoenix Utility Company standing at 40 ft. below sea level in the "glory hole" at the Ariel dam site. Left to right: A. W. Angell, purchasing agent, Northwestern Electric Company; H. F. Lincoln, superintendent of construction, Phoenix Utility Company; O. L. LeFever, general superintendent, Northwestern Elctric Company; Lyman Griswold, consulting engineer, Inland Power & Light Company; L. T. Merwin, vice-president and general manager, Northwestern Electric Company; and George H. Wisting, industrial engineer, Northwestern Electric Company

Narrow box canyon in the stream bed of the Lewis River at the Ariel dam site. Shovel is at about El. —50. Sections of the constant-angle arch dam may be seen in the center background, and show stage of construction on Sept. 1

The power house, which will be close under the dam, is designed to house four 45,000-kw. units. Only one unit is scheduled to be installed initially; it will be ready for operation early in 1932.

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New Boise Building for Idaho Power Company

The Idaho Power Company will build a new general office building in Boise this fall occupying a space of 100 x 122 ft. at the corner of Thirteenth and Idaho Sts. The building will be of concrete construction, two stories high and so constructed that a third story can be added whenever it becomes necessary.

According to the proposed plans, only the general offices will be housed in the new building. Office and sales room of the Boise division will continue to be maintained in their present location in the Boise City National Bank Building.

Power Plant Wins Architectural Honor

THE Leaburg hydro-electric plant of the City of Eugene, Ore., was chosen as typical of Oregon hydro-electric plants in a recent selection of typical architecture throughout the state by a committee from the Oregon Chapter, American Institute of Architects. The subjects considered included homes, industrial plants, public and commercial buildings, and statuary. The survey, which is conducted by the Chicago Tribune, will place the buildings chosen from Oregon in competition with those from every other state.

The Leaburg power plant was designed by Stevens & Koon, consulting engineers, Portland. Ellis F. Lawrence, dean of the School of Architecture, University of Oregon, Eugene, was the architect.

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Contracts Let for Hood River Municipal Plant

A further step taken by the City of Hood River to build its own street lighting system and supply the power therefor from a municipal plant is recorded in the awarding of the contract for the installation of the distribution system to J. C. Roberts, Spokane, on a bid of $25,985; the contract for the power house to the Apple City Electric Company, Hood River, for $1,942.60; and to the Pelton Water Wheel Company for waterwheel and generator for the sum of $5,229. In the primary election last May the citizens voted $42,000 in bonds for the project.

The generating equipment is to consist of a 110-hp. Pelton waterwheel with a 75-kw. Westinghouse generator. The water to be used is that flowing into the city's new domestic water system reservoir.

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CONTRACTS LET FOR EUGENE (ORE.) STEAM PLANT—Contracts for equipment for the steam-electric plant under construction at Eugene, Ore., have been awarded by the Eugene Water Board on advice of Stevens & Koon, consulting engineers of Portland, as follows: To Gordon & Finkbeiner Company, Portland, for the boiler, $55,020; to General Electric Company for the turbo-generator, $96,500; to C. H. Wheeler & Company for the condenser, $23,000; and to Young-Hartman, Portland contractors, for the brick work for the boiler, $12,366.

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$25,000 for Portland Public Ownership Study

With a view to determining whether or not the City Council, Portland, Ore., shall recommend to the budget committee that $25,000 for investigating the possibilities for municipal hydro-electric development be placed in the city's 1931 budget, representatives of the mayor's special investigating committee have completed a tour of some of the more promising power sites near the city. The committee consists of O. Laurgaard, city engineer, Benjamin S. Morrow, chief engineer of the Bureau of Water Works, John J. Curtin, statistician, and Frank S. Grant, city attorney. On a trip just completed, H. A. Rands, electrical engineer with the U. S. Engineer's office, John H. Lewis, former state engineer, and C. A. Alphonse, assistant to one of the city commissioners, accompanied the party. Inspections were made of power sites on the Columbia and the Deschutes Rivers and on small streams in the Cascade Mountains.

It will be recalled that a like amount for a similar investigation was placed in the budget last year by Commissioner Stanhope S. Pier, but that the item was disallowed by the tax conservation commission.

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Employees Use Appliances in "Electrikitchen"

THIS modern kitchen, completely equipped with electrical appliances for demonstration purposes and service to employees, has been installed in the basement of the Riverside (Calif.) office building of The Southern Sierras Power Company. The "Electrikitchen," as it is called, is equipped with an electric range, refrigerator, juice extractor, mixer and beater, clock, sandwich toaster, waffle iron, toaster, egg boiler, urn set, percolator, and ventilating fan. Employees use the kitchen at lunch time, and many of them become interested in this way in appliances that had not come to their attention before. Demonstrations are given in the Electrikitchen by Miss L. Orrie Groce, home demonstrator of the Southern Sierras company.

Move to Oust Commission Crowding Oregon Courts

With court congestion already becoming so great in the State of Oregon as to cause alarm, and fearful that the present agitation to abolish the Public Service Commission may result in there being still more litigation diverted to the various departments of justice, both jurists and lawyers have been aroused to action against any movement of the kind.

Julius L. Meier, independent candidate for governor, pledges himself to abolish the commission, if elected, while a number of legislative candidates have committed themselves to the same policy, and other political factions are endeavoring to raise funds to cover the expenses of circulating an initiative petition for the repeal of the commission acts.

The campaign against the abolition of the commission has been opened by Judge James T. Brand, of Marshfield, who is strongly upholding the department.

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San Joaquin Co. Leases P. G. and E. Gas Lines

The California Railroad Commission has approved an agreement between the Pacific Gas and Electric Company, San Francisco, and the San Joaquin Light & Power Corporation, Fresno, under which the former company will lease to the latter its existing gas manufacturing and distribution properties in the county of Fresno, with the exception of the Pacific company's main line high pressure gas transmission lines and direct lateral pipe lines extending therefrom, for a period of ten years. The San Joaquin company will pay to the Pacific company the net profit accruing from the operation of the leased properties, after caring for operating expense and all other obligations.

The San Joaquin company control was recently acquired by Pacific Gas and Electric Company under authorization by the Railroad Commission of the stock purchase, but the actual merging of the properties of the San Joaquin company with those of Pacific Gas and Electric Company has not been requested of the commission.

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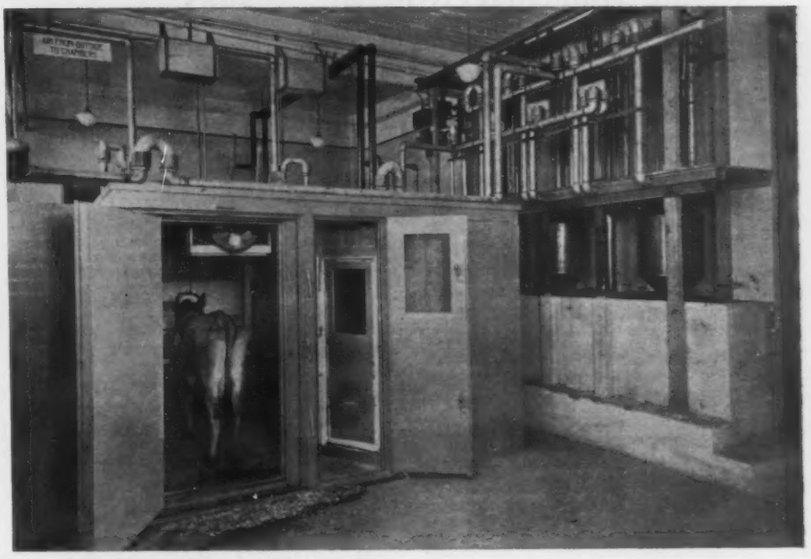
$3,000,000 HYDRO PROJECT TO BE CONSTRUCTED IN ALASKA—Plans for the construction of a hydro-electric development at Hyder, Alaska, costing $3,000,000 and having an ultimate capacity of 20,000 hp., have been announced by Willis T. Batcheller, president of the Portland Canal Power Company, Dexter Horton Building, Saettle, Wash., which has been organized to carry out the project. Edwin R. Wright, resident engineer, will be actively in charge of surveys and preliminary work. The initial installation would have capacity of 10,000 hp.

Cow's Efficiency Now Measured Electrically



ELECTRICITY'S latest task is a boon to the dairy industry. In the laboratories of the College of Agriculture, University of California, at Davis, Calif., there has just been completed a "respiration chamber" in which the input-output efficiency of a cow may be tested electrically. In fact, provisions are made for tests on two cows at one time.

The animals are provided with comfortable stalls in air-tight chambers, and are fed, watered, milked and cleaned under careful laboratory conditions. The feed is weighed, the water is analyzed and the air in the charmbers is cooled and humidified. Attendants who enter the chamber at regular intervals must pass through an air lock auxiliary chamber to prevent air leakage.

The breathing of the animals is measured by an elaborate "mechanical lung" device called an "aspirator," designed and built by Dr. Kleiber on the staff of the college. Through the use of the equipment, scientists may ascertain what effect, if any, the use of treated water, variation in diet, cooled air or other controllable conditions may have on a cow's efficiency. A classifier, in the basement under the respiration chamber, separates the waste products. About the only thing which is not analyzed by this machine is the cow's moo.

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Private Company's Rights Claimed by Oregon City

In an effort to gain priority rights to 650 sec.ft. of water from the North Fork of the Santiam River, the City of Salem, Ore., has filed an application with the state engineer for a permit to appropriate this amount from both stream and tributaries for domestic, irrigation, manufacturing and power purposes. This filing covers the same water and power sites which were previously filed upon by the Northwest Power Company of Portland.

In competing with the private utility for rights to appropriate the waters of the Santiam River, the city announces that it will endeavor to establish that the applications of the Northwest Power Company are now without force and effect on the grounds that the river in question was and has been withdrawn from appropriation by private individuals since the year 1922 and therefore previous to the time of filing preliminary applications by the company. It will be contended by the municipality that the stream was closed by agreement between the then state engineer, John H. Lewis, and the federal government.

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Texas and New Mexico Claim Rio Grande Plant

Until the United States Supreme Court hands down a final devision as to whether the Rio Grande power plant of the El Paso Electric Company is in Texas or New Mexico, the company will withhold payment of taxes, according to announcement of F. J. Gannon, president.

The power plant is situated on a strip of land claimed both by New Mexico and Texas. The land, lying along the Rio Grande and north of El Paso, was awarded to New Mexico in a recent survey ordered by the United States Supreme Court. However, the survey has not been finally approved and the State of Texas still claims ownership of the plant and the right to continue to tax it. The State Tax Commission of New Mexico recently assessed the property at $1,500,000.

Portland Companies' Newspaper Campaigns Refute Municipal Ownership Claims

WITH a view to dispelling the fallacious popular belief in Portland that power rates are high and with a view to answering in some measure the claims of municipal ownership enthusiasts in that territory, the Pacific Public Service Company and Northwestern Electric Company have commenced a campaign of institutional advertising in the local newspapers worthy of note. Each company's campaign is conducted separately and each takes a slightly different method of attack though both series of advertisements stress the relative cheapness of power in the territory and the desirability of not engaging in municipal experiments of doubtful outcome.

The series of advertisements being run by the Pacific Northwest Public Service Company is called the "Horse Sense" series, elaborating the slogan "Boost for Oregon and everything in it! It's good horse sense." An interesting feature of the series has been the publishing of statements by prominent business men of the city in which these men, many of whom are industrialists and large buyers of power, insist that power is cheap in Portland and advise the citizens against attempting to make any change through municipal or other governmental ownership. Men quoted in these advertisements have been J. Zehntbauer, president, Jantzen Knitting Mills; John W. Parker, vice-president and general manager, Portland Vegetable Oil Mills; W. F. Prier, president, Oregon Brass Works; and F. E. Rowell, Willamette Valley orchardist.

The Northwestern Electric Company's series stresses the cheapness, adequacy and sufficiency of the service, bringing out the facts by actual comparison with other cities, and by charts showing the reduction in average rate per kw.-hr. over a period of years.

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San Francisco to Vote on Utilities Commission

By a vote of eleven to five the San Francisco Board of Supervisors has approved a charter amendment creating a public utilities commission, and this amendment will be submitted to the voters at the Nov. 4 election.

The main features of the amendment are:

1. Commission shall consist of three members holding office six years at salaries of $6,000 each, terms of office to be staggered.
2. First members shall be appointed by mayor. They will draw lots to determine who shall hold the three different terms. Successor thereafter shall be elected. First term to expire January, 1932.
3. Commission shall appoint manager of utilities. Manager must be a Californian.
4. If surplus in any year exceeds 25 per cent of operating expenses, said surplus may revert to general fund, at option of board of survisors.
5. Wages for all utility employees to be fixed by commission.
6. City attorney to act as legal advisor for commission with $4,000 addition to present salary of $8,000.
7. Commission shall monthly make appropriations for conducting all utilities, as follows: First—operation; second—bond interest and redemption; third—depreciation and accident reserve.
8. If commission wishes to fix rates at figure lower than cost of all expenses, such rates shall be submitted to board of supervisors who can fix said lower rates by a majority vote.

The amendment was agreed upon after lengthy discussion, the main points of dispute being the provision making the commission elective, which it was contended would throw the entire commission into politics, which the creation of the commission was intended to prevent; the limitation that the manager of utilities should be a California which, it was argued, would deprive San Francisco of acquiring the best executive possible; and the adoption of the word "may" in the section relating to the surplus reverting to the general fund, which will subject the surplus to an annual dispute as to its disposition and use.

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CENTRALIA, WASH., AND PUGET SOUND CO. TO OPEN FINAL SERIES OF SUITS—The last of a long series of law suits involving rights of the City of Centralia, Wash., in its million-dollar hydro-electric power project on the Nisqually River will be held in federal court at Tacoma before a jury, with Judge Stanley Webster presiding. The city is condemning the alleged water rights of the Puget Sound Power & Light Company which the latter company contends it owns on the Nisqually River between the city's dam and power site. The company's claim is based on ownership of land and not on the right granted it by the state. J. H. Jahnke, city attorney, and O. M. Thorgrimson, Seattle, special attorney, are acting for the city. A decision in favor of the power company, it is stated, might seriously affect the state's authority to grant water power rights on its streams.

First in a series of "Horse Sense" advertisements being run by the Pacific Northwest Public Service Company in Portland newspapers

Jantzen's President Approves Low Oregon Power Rates

HORSE SENSE SERIES...NO. 1

JOHN ZEHNTBAUER has his feet squarely on the ground. He thinks straight—uses horse sense, in short. Thanks to him, Portland's name has gone round the world with "The suit that changed bathing into swimming." Here is what he thinks about the Oregon power situation:

"I guess our Jantzen plants use more electric power than the average industrial concern. We pay the same rates as the rest. And it amounts to a mighty little part of our expense. Now suppose we Oregon folks 'junk the powe campanies' and duplicate their plants. Who pays for the new plants? Or suppose we buy the power companies. Who pays the bill? Nobody but the Oregon taxpayers, of course. Would we get lower rates? How could we? **The power companies take all the risks of the business, pay Oregon stockholders' dividends, pay huge taxes to Oregon governments, and still sell power for less in Portland than it costs users almost anywhere else in America!**

"That takes mighty efficient management. No municipal plan could do any more. We all know that most of them don't do as well, even though exempt from taxes and paying no stockholders' dividends.

"We are trying to get more industries for Oregon and yet some thoughtless people would destroy one of our biggest industries by short-sighted legislative measures. Personally I want to see our public utilities regulated and controlled. They are willing to submit to that. It spurs them on to greater developments. They work with the rest of us to bring more people and more business to Oregon so they can continue to grow. Oregon needs their help.

"It's only plain good business to encourage them."

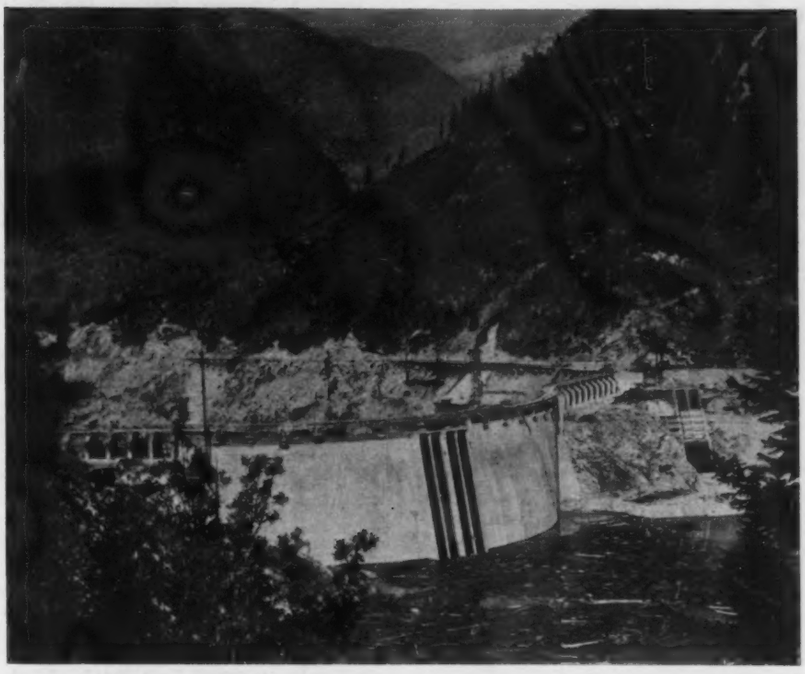
J. Zehntbauer

Jantzen

What Oregon needs is a dozen trade-marks as famous as this! And more level-headed leaders like John A. Zehntbauer, Jantzen Knitting Mills' President, to speak their minds. Such men see through glittering "campaign promises" and realize that prosperity and opportunity are created by sound industries, well financed—not by the mere passing of laws. Pacific Northwest Public Service Co. "Pepco"

BOOST FOR OREGON AND EVERYTHING IN IT! IT'S GOOD HORSE SENSE

Builders Turn Diablo Dam Over to City of Seattle



MARKING the completion of three years' work, Diablo Dam, the City of Seattle's great structure across the Skagit River, was turned over to Seattle city officials by I. S. Oakes, president of Winston Bros. Company, which built the dam, on Aug. 27.

Preliminary work on the Diablo Dam, which impounds water in the Diablo reservoir extending 6 miles upstream to the site of the proposed Ruby Dam and containing 90,000 acre-ft. storage capacity, was started Sept. 27, 1927. The completion of the dam is a great step forward in the progress of the City of Seattle's hydro-electric development project. The initial installation in the Diablo power plant will provide for 167,000 hp.; the ultimate capacity will be 225,000 hp. The ultimate cost of the Diablo development, including the present dam, proposed power house and transmission lines is estimated at $11,000,000.

Dedicatory ceremonies were held on the 1,180-ft. crest of the dam, which rises 389 ft. above bedrock. More than 300 people representative of the city's official, business and professional life, including Mayor Frank Edwards, members of the City Council and the Board of Public Works, and R. H. Thomson, Seattle city engineer, participated in the dedication as guests of the City Light Department and Winston Bros. Company.

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Investigation of Utilities' Political Payments Ends

In a divided opinion, Commissioners Clyde L. Seavey and William J. Carr, dissenting, the California Railroad Commission early last month dismissed its investigation into expenditures made by the Southern California Edison Company, Ltd., Los Angeles Gas and Electric Corporation, Southern Counties Gas Company, and Southern California Gas Company for political purposes and the diverting of the time and efforts of the employees of those corporations to the advancement of political causes. The "political causes" in question were in connection with a municipal election held on June 4, 1929, in the City of Los Angeles, at which bonds for the development of certain municipal projects were voted upon.

Commissioners Decoto, Louttit and Whitsell in dismissing the investigation held that while the record shows the Sounthern Counties Gas Company expended for election purposes $200; Southern California Gas Company, $1,683.35; Southern California Edison Company, $45,608.05; and Los Angeles Gas and Electric Corporation, $40,282.58, the record further shows that the expenditures were charged by the companies to their surplus account, and not to operating expenses. They held that as a result the rate payers would not be called upon to pay any part of such election expenditures.

Furthermore, the majority opinion declared that: "The testimony of various witnesses shows that the public utility services rendered by the respective companies were not impaired by the withdrawal of company employees from their regular duties during the election period."

Boulder Dam Construction Officially Commenced

Boulder dam construction was officially opened on Sept. 17 by a public ceremony at which Dr. Ray Lyman Wilbur, Secretary of the Interior, was the presiding officer. Dr. Elwood Mead, Commissioner of Reclamation, several Western governors, members of Congress, and government officials were present. The celebration was held at the Boulder dam townsite and was marked by a silver spike ceremony along the proposed railroad line which will connect the new town with Las Vegas.

Commencement of actual construction on the railroad is expected early in October. The Union Pacific, which will operate the spur line as far as the town, has opened bids. Merritt, Chapman and Scott, a contracting firm of San Pedro, Calif., made the low bid but final award of contract had not been made at last report.

Selection of a project townsite has been made after consideration of five possible locations, of which the highest and farthest from the dam was chosen because of its superiority on several counts, lower temperature being an important factor in the choice. The new town, now an utterly barren waste of sagebrush and bunch grass, will be on a level expanse at the top of a divide overlooking the dam, the reservoir, and the mountains beyond, a vista considered of high scenic value. The proposed railroad and highway will pass from the town down a draw into the main river valley at the dam. The townsite elevation is 2,500 ft.; that of the canyon floor 650 ft.; and of the dam crest, 1,232 ft. The dam will be six miles from the town.

Financial

Utility Employees Sell 3,180 Shares of Stock

In a recent stock-selling drive, staged to secure local customer-partners, employees of the El Paso Electric Company, El Paso, Texas, placed 3,180 shares of $6 dividend preferred stock. The bogey set for this sale was 2,000 shares, and results achieved exceed this mark by approximately 59 per cent.

Approximately 375 employees took part in the selling campaign. They were formed into teams, in charge of a team captain, the various department heads acting as team supervisors. A cash bonus of 50 cents a share was paid employees, and in addition suitable prizes were offered for the high team in each department and the high man or woman on each of the teams. A total of 180 employees made actual sales during the campaign.

Portland General Electric Company Capitalization Completed

COMPLETING its plans for the segregation of its utility properties into light and power, street railway and gas subsidiary companies, the Pacific Northwest Public Service Company has incorporated in the State of Oregon the Portland General Electric Company to own and operate the light and power properties and the Portland Traction Company for the operation of the Portland street railway property. The Seattle Gas Company owns and operates the gas properties, chief of which is the system serving gas to the City of Seattle. Ownership of all these companies vests entirely in the Pacific Northwest Public Service Company.

Outstanding bonds of the Portland Raidway, Light & Power Company, a predecessor, have been called and a new issue of first and refunding mortgage 4½ per cent gold bonds, due 1960, of Portland General Electric Company, have been issued in the amount of $40,000,000 and offered by a syndicate headed by Harris Forbes & Company. The capitalization of the Portland General Electric Company on completion of this financing will be as follows:

	Authorized	To Be Outstanding
Common stock (no par)	500,000 shares	250,000*
First mortgage 5 per cent bonds due 1935	closed	$6,813,000
First and refunding mortgage gold bonds 4½ per cent series, due 1960 (present issue)	**	$40,000,000

* All except directors' qualifying shares to be owned by Pacific Northwest Public Service Company.

** To be limited by restrictive provisions of the mortgage.

The bonds of the predecessor Portland Railway, Light & Power Company, that have been called are:

First and refunding 5's, 1942.

First lien and refunding series A 7½'s, 1946.

First lien and refunding series B 6's, 1947.

First lien and refunding series C 5½'s, 1951.

The effect of this segregation of the various properties into separate companies and the financing plan for the Portland General Electric Company has been to remove from the financial structure, all bonds against the railway properties except a small amount of old Portland Railway Company first mortgage 5's which are due on Nov. 1, 1930, and for which funds have been deposited for redemption.

No plans for future financing of the Portland Traction Company have been announced since the matter of a possible new service-at-cost franchise for this company is now under consideration.

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P.C.E.A.

Commercial Conclave Program Announced

Opening at the Fairmont Hotel, San Francisco, on Thursday, Oct. 23, at 10:30 a.m., with reports on a recent N.E.L.A. executive committee meeting in New York City by A. M. Frost, president, and K. I. Dazey, managing director, P.C.E.A., the Commercial Section will spend the remainder of that day and Friday morning in parallel committee sessions, according to E. G. Stahl, chairman of the Section. A luncheon meeting Thursday noon will be addressed by Frank Weiss, vice-chairman of the Section, and Al C. Joy.

Friday afternoon's meeting, which will be addressed by M. P. Meyer, merchandising manager, Dohrmann Commercial Company; Emil Brisacher, of the San Francisco advertising agency of that name, who will speak on "Advertising in Relation to the Sales Program"; and P. M. Downing, vice-president, N.E.L.A., speaking on the importance of the sales department to the utility.

Engineers Meet at San Francisco

A. M. FROST, president of the Pacific Coast Electrical Association, in a talk before the luncheon meeting of the Engineering Section at its regular San Francisco meeting at the Clift Hotel, Sept. 10-12, named as the slogan for the association, "Continually Improving Service to the Consumer." More careful personnel selection, better development of departments, improved distribution, improved regulation, improved continuity of service, extension of service, simpler rates, and simpler rules were factors named by Mr. Frost as single goals which, collectively, would make the slogan an actuality.

R. H. Halpenny, chairman of the Engineering Section, advocated a better publicizing of the section work He asked that every member give full credit to the Engineering Section meetings when discussing developments arising from or through them.

"Every man," he said," should adopt a policy of presenting a formal or informal report to his superiors upon a return from a meeting. In this way, Engineering Section meetings and activities will be kept constantly and actively before the managements of member committees."

Good attendance marked the committee sessions, each lasting for one day. Reports of the work of the various committees follow:

Accident Prevention Committee

S. C. DICKINSON

Pacific Gas and Electric Company, Chairman

For 1929, nineteen member companies of the P.C.E.A. employing 19,417 people, reported 1,506 lost time accidents, including 27 fatalities. Seventeen companies employing 11,887 people reported a cost of $216,335, or $18.19 per employee, an expenditure of $353,195 for the maximum number reporting. Money spent was for compensation, medical, hospital, and insurance premiums and possibly the cost of lost time when actually paid by the employer without reimbursement.

From data now available, it is estimated that in a unit group of 330 accidents, 300 result in no injuries, 29 in minor injuries, and one in a major or lost-time case, and the indirect cost of accidents is estimated to be four times medical and compensation payments. Such costs include (1) lost time of the injured employee; (2) cost of other employees stopping work out of curiosity, out of sympathy, to assist injured employee, or for other reasons; (3) cost of lost time by foremen, supervisors, or other executives as follows: assisting injured employee, investigating cause of accident, arranging for replacement of employee, replacement, and preparing accident reports; (4) first aid; (5) damage to tools, machine, or other property, or spoilage of material; (6) interference with production, and many other items.

It can be estimated from the 1,506 lost time accidents reported that the Pacific Coast companies had 451,800 accidents with no injuries, 43,674 minor injuries, and 1,506 lost-time injuries—a total of 496,980 accidents, with a total cost of some $4,243,126.

To combat this the committee will endeavor to impress upon all concerned that accident prevention is good business, and that it is entirely defensible even from a purely mercenary viewpoint.

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Electrical Apparatus Committee

R. D. LIKELY

San Joaquin Light & Power Corporation, Chairman

The subcommittee on switchgear, under R. B. Kellogg, chairman, will touch lightly on circuit breakers, describing new developments, and will devote the major part of its effort during the present year to the study of metal enclosed switchgear. One of the questions raised at the San Francisco meeting was that of grounding a feeder or bus when a metal enclosed switch is withdrawn to permit work on the feeder or bus.

The subcommittee on substation design, under C. E. Baugh, chairman, will have papers describing layouts of substations of various classes built within the last four years. The use of actual outdoor circuit breakers instead of indoor switches enclosed in steel, the use of exposed conduit, a new development in oil handling, and miniature control and metering equipment were discussed. The last named subject is very new and, as three companies have installed or are installing such equipment, is quite pertinent. The general plan is to use small ammeters with a full scale reading of perhaps ¼ amp. and small voltmeters with a full scale reading of not over 60 volts. Small instrument transformers connected to the secondaries of the main instrument transformers give these values. Relays are located at the circuit breaker and a simple supervisory control system is used to operate switches. This permits using control cables with from four to 25 pairs of No. 16 wire instead of the many larger wires and conduits formerly used, resulting in large savings in many cases. Emphasis will be laid on the reasons back of the choice of certain methods or apparatus and on the economics of design.

The subcommittee on operating and maintenance methods, under J. D. Enefer, chairman, will discuss frequency of inspection, factors used to determine when inspections are necessary, organization of crews, special tools, loading of apparatus, utilization of salvaged apparatus, protection of potential transformers, devices for indicating energized circuits, and testing and cleaning of insulators.

Hydraulic Power Committee

C. M. MARDEL,
Great Western Power Company, Chairman

R. H. Halpenny, Engineering Section chairman, gave a brief talk at the morning session. Reports were read by W. Dreyer, chairman of the subcommittee on current research and practice in hydro development; J. W. Jourdan, chairman of the flow line conduits subcommittee; and J. M. Gaylord, chairman of the subcommittee on special alloys for hydraulic equipment.

I. C. Steel gave an interesting talk on the Mokelumne River development of the Pacific Gas and Electric Company, also showing lantern slides of outstanding features.

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Inductive Co-ordination Committee

F. B. DOOLITTLE
Southern California Edison Company, Chairman

Four cases were presented to the subcommittee on inductive co-ordination. Discussion of the extension of facilities by both power and telephone utilities led to the conclusion that considerable economy can bebe realized by increasing the effectiveness of co-operative planning. The matter was left open for special study.

A report on the formation, membership, and proceedings of the California Radio Interference Association, as read to the subcommittee on radio co-ordination. Co-operation with the association and various radio trades groups will be one of the functions of the subcommittee. Senate Concurrent Resolution No. 22, relating to radio interference, was read and discussed. To obviate the necessity for a state regulatory body, co-operative methods of handling complaints may be worked out.

An illustrated paper describing development, tests, and performances of the telephone projector was presented to the subcommittee on power communication systems by R. B. Ashbrook, of the Southern California Edison Company, Ltd. This device forms the basis of a power line telephone protective scheme which not only maintains continuity of service under fault conditions on the transmission line, but also protects valuable equipment from damage under extreme conditions of contact between telephone circuit and transmission line.

The question of high resistance found in certain sleeve splices used on telephone lines was brought up and methods of obtaining splices of low resistance will be studied further.

The subcommittee on common neutral has completed its study and filed its report with the Railroad Commission. Further work may be required by the commission before definite rulings are made on this method of distribution for general application throughout the state.

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Meter Committee

W. A. McMEEKIN,
Los Angeles Gas and Electric Corporation, Chairman

Education of metermen was the opening subject for discussion. A short course for metermen will be held at Tucson, Ariz., during the second week in November instead of next spring. The courses at the University of California, Berkeley, and the California Institute of Technology, Pasadena, will be held next spring. It was the opinion of the committee that the new N.E.L.A. course for metermen should be supported.

A study will be made of the standard practices of the operating companies in connecting up reactive kva. meters as well as the testing employed. Tests will be conducted on special installations of unbalanced current, voltage, and phase displacement. Retactive kva. metering is a new subject for the committee.

Reports were made on special tests being conducted on measuring strains in concrete dams; measuring very small currents without opening the circuit; testing resistance of transformer and station grounds; and measuring volt-ampere hours in connection with power factor rates.

Outdoor metering and the placing of meters ahead of fused switches was discussed at length. Some operating companies have been experimenting with outdoor meters. The outdoor meter will undoubtedly minimize current theft.

Other subjects considered were test facilities; indicating and recording meters with reference to remote totalizing measurement; investigation and tests on various forms of relays; operating problems of meter departments; application of 5-amp. meters to modern lighting installations; and new developments and meter obsolescence.

Overhead Systems Committee

J. O. TOBEY,
Pacific Gas and Electric Company, Chairman

The distribution transformer, operation, and maintenance subcommittees have for their consideration this year the four following subjects:

Radio interference through inherent characteristics, causes and remedies of oil deterioration, load determination methods, and distribution transformer loading.

Upon completion of study of the last subject, some important tables and reference data may be made available for use in determining proper transformer sizes to permit maximum load factors consistent with safety and regulation.

Study of tree wire, overhead cable bare vs. weatherproof wire, span lengths, and other operating subjects resulted in an interesting session.

Dr. Randall of the University of California at Berkeley gave a talk on dust treatment of poles infested with termites. He is an active worker on the California Termite Investigation Committee, whose activities and studies are being financed by various companies and organizations interested.

Standardization, grading, and rating of fuses as used in distribution line cutouts furnished material for discussion.

Favorable results are being achieved through the line materials standardization committee.

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Prime Movers Committee

C. H. DELANY,
Pacific Gas & Electric Company, Chairman

Turbo-generators, condensers, boilers, and auxiliaries were discussed from the standpoint of changes in design that are desirable on account of special operating conditions. Modifications in the design of equipment were suggested where difficulties in plant operation were reported.

An outline was given of information to be gathered toward a comprehensive compilation of performance data of Pacific Coast installation. These data will compare the heat balance and the most important characteristics of the plants, including a tabulation of the principal losses, and curves showing the theoretical and actual efficiencies of the different plants.

The subjects of automatic control, of boiler room operation, including description of the automatic features of some of the plants now operating under automatic firing, were discussed. It was pointed out that automatic firing has its limitations, and while proving satisfactory when the plants are operating with a fair load, it cannot be depended on for picking up a sudden load on a plant that has been standing by.

Preparation of an operating code manual to serve as a supplement to the N.E.L.A. serial report No. 289-58 was discussed. It was felt that this section could produce a code applicable to oil- and gas-fired boilers which would prove of value to those in charge of plant operation. The subject of deposits on turbine blading was also brought up, and the experience of one company in removing such deposit by means of saturated steam was described.

Treatment of feed water was discussed and an outline was given of the proposed work of the subcommittees on station piping and on plant management. Extracts were read from reports of committees of other geographical sections.

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Underground Systems Committee

E. R. STAUFFACHER,
Southern California Edison Company, Ltd., Chairman

Considered first were Engineering National Section reports on "Conduit and Manhole Temperatures" and "Cable Operation." Operating practice, methods of making tests, and methods of ventilation were considered in the report covering temperatures, and experiences with cable operation covering number, location, and various forms of cable breakdowns were discussed. Suitability and justification of non-leaded cables as compared with leaded cables were considered. Each has a definite field, though the non-leaded type is looked on more favorably than in the past because it is less expensive. Reports covering pulling stress of cable through various types of ducts were submitted. One report covered a newer form of duct material which gives promise because of lesser pulling stress.

Representatives of manufacturers of electrical equipment presented illustrated talks covering fundamental considerations of a.c. network systems and the various forms of transformers and network protectors available. Economic application of and justification for the a.c. network system were discussed and will form the major portion of the subcommittee's work. Periodic movement of lead-covered cables as a result of alternate heating and cooling caused by load cycles was discussed. Under certain conditions cables may be subjected to sufficient motion to result in breakage of the sheath after a few years of service. It is quite probable that a number of cable breakdowns classified as unknown may be attributed to this cause.

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Varied Discussion Features Purchasing-Stores Meet

Opening its meeting with the hearing of a report by W. de Waard, the Purchasing and Stores Section of the P.C.E.A. held a two-day conclave at San Francisco Sept. 11-12.

A review of subjects previously covered by the Section and results obtained was presented by W. J. McCullough, general storekeeper, Southern California Edison Company, Ltd. Considerable discussion on matters of transcontinental freight rates, packing methods, claims, delivery of shipments from warehouse to consignee's plant followed an address on "Traffic" delivered by W. S. Dawson, assistant general freight agent, Southern Pacific Company, San Francisco.

A report by C. C. Castle, of the Southern California Edison Company, Ltd., on "Personnel Training," was submitted by Mr. McCullough at Friday morning's meeting. Other reports covered such subjects as "The Book of Rules and Regulations of the Purchasing Department," and "Education of Employees on the Rates and Uses of Electrical Appliances," the latter prepared by E. P. Miller, Southern California Edison Company, Ltd.

Matters brought up at the meeting for discussion pertained to the storing and handling of transformer oil, reduction of investment in empty drums and reels, the testing of material, prevention of accidents in the stores department, and the elimination of hazardous conditions.

The afternoon of Friday, Sept. 12, was given over to a joint meeting of the Section with a committee of the Engineering Section and manufacturers, to discuss the standardization of pole line hardware.

The work of the Section this year is assigned to four divisions, namely the purchasing, stores, stores accounting, and standardization divisions. Division chairmen are C. A. Kelley, purchasing; W. Maddock, stores; A. A. Charonnat, stores accounting; and G. M. Richardson, standardization.

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ENGINEERING SECTION TO MEET IN LOS ANGELES IN DECEMBER—December 10-12 are the tentative dates set for the second conclave of the Engineering Section, P.C.E.A., which will be held in Los Angeles.

Meetings

Coming Events

Pacific Coast Electrical Association—Commercial Section meeting, San Francisco, Oct. 23-24, 1930.

Engineering Section meeting, Los Angeles, Dec. 10-12, 1930.

International Association of Electrical Inspectors, Southwestern Section—Annual convention at Hotel Maryland, Pasadena, Calif., Oct. 6-8, 1930.

National Electric Light Association—Fifty-fourth convention and exhibition, Atlantic City Auditorium and Convention Hall, Atlantic City, N. J., June 8-12, 1931.

Rocky Mountain Division meeting, Franciscan Hotel, Albuquerque, N. M., Oct. 20-22, 1930.

National Electrical Wholesalers Association, Pacific Division—Thrice-yearly convention at Agua Caliente, Mexico, Oct. 8-10, 1930.

Western Metal Congress and Exposition—Annual convention in San Francisco, Feb. 16-21, 1931.

Indian Spectacle Planned for Albuquerque Meeting

The National Electric Light Association, Rocky Mountain division, convention at Albuquerque, N. M., Oct. 20-22, promises to have an historic flair. It will be the last such event conducted under the joint auspices of the Colorado, Wyoming and New Mexico Utilities Associations which have recently been welded into one comprehensive unit, with a full-time secretary.

Already reservations have been received from delegates in eighteen states, and a record-breaking attendance is forecast.

"The First American," an Indian spectacle, is scheduled as a dramatic feature. Seven tribes — Chickasaw, Tesuque, Taos, Puje, Isleta, Navajo and Santa Clara—are to participate in the pageant. Chickasaw Princess Lou-Scha-Neja (Humming Bird) will be co-starred with Haske Naswood—now in "talkies" at Hollywood—and Chief Yowlache, baritone of the Yakima tribe. Mike Kirk, known as "White Chief of All Indians," has been engaged to produce "The First American."

Arrangements for this remarkable presentation were made by Arthur Prager, manager of the Albuquerque Gas & Electric Company, who is entertainment committee chairman, and George E. Lewis, newly appointed managing director of the Rocky Mountain division.

J. A. Clay, president of the N.E.L.A. Rocky Mountain division, will preside over business sessions at the Franciscan Hotel, convention headquarters.

Some high lights on the program will be an address by W. Alton Jones, national president; a paper on "Electric Utilities—Their Service and Prospects," by Paul S. Clapp, national managing director; a speech on "Industrial Relations," by Floyd F. McCammon, assistant general superintendent of the Public Service Company of Colorado, and Herbert S. Sands' discussion of "The Effect of General Business on Load Building." Mr. Sands is a nationally known consulting engineer and is president of the Denver Chamber of Commerce.

Dr. J. F. Zimmerman, president of the University of New Mexico, is scheduled to talk on a subject yet to be assigned. On the closing day, Miss Irma Ward, of the Public Service Company of Colorado, chairman of the women's committee, will call a meeting of her group, which plans a busy session.

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ELECTRIC CLUB HOLDS CONTEST FOR WOMEN—The Southeast Electric Club, of Huntington Park, Calif., and vicinity held a dinner dance on Sept. 4 in which 50 members and guests participated. Two prizes were given for the best paper written by a woman member on "The Use of Electrical Appliances in the Home." Mrs. R. D. Hodson, of the Hodson Electric Shop, won first prize consisting of a Westinhouse coffee set valued at $35 given by Reiman Wholesale Electric Company, and Mrs. J. Wygle carried off the second prize, an electric cooker donated by the Southern California Edison Company, Ltd. Judges in the contest were R. H. White, district manager, Southern California Edison Company, Ltd.; J. Cezar, Edison Lamp Works; and R. Cornenberger, Bell Electric Company.

Seattle Club to Campaign for Lighted Highways

A plan for the illumination of the principal arterial highways of the State of Washington was indorsed by the Electric Club of Seattle at a meeting held on Sept. 8. The meeting, which was attended by officials of the Automobile Club of Washington and the State Good Roads Association, authorized the appointment of a committee of the club to conduct a campaign in behalf of the movement.

In addition to making it possible to drive at night in safety and comfort, lighted highways would open the way to electrification of the farms and rural sections, declared George W. Boyd, illumination engineer of the Westinghouse company. He placed the cost of the best available system of lights at about $2,500 a mile for equipment and installation.

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VANCOUVER CLUB HOLDS GOLF TOURNAMENT—Members of the Vancouver Electric Club recently held their fourth annual golf tournament at Marine Drive Golf and Country Club. A. C. Eddie, of the right-of-way engineering department, B. C. Electric Railway Company, won the tournament with a low net score of 68, thereby carrying off the championship cup and the golf bag which was presented for first prize. The runner-up with a 71 was S. Fawcus, while the lowest gross score was made by P. W. Brown, with an 84. Both the latter were recipients of drivers. The tournament was followed by the annual dinner of the organization.

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Orange Belt Electric Club in Its Third Year

FRANK VAN GILLUWE, of the Pacific States Electric Company, was guest speaker at this luncheon meeting of the Orange Belt (Calif.) Electric Club, a group of more than 100 members of the electrical industry in San Bernardino, Redlands, Colton, Riverside, Uplands, Ontario, and Pomona. September 16 marked the close of the second year of organization of this club which meets monthly at the Fontana Inn, Fontana, with between 50 and 60 members in attendance. George C. Blair is president.

Manufacturer Distributor

Lamp Manufacturers Unite in $300,000 Campaign.

Conceived and organized in the early summer by fixture manufacturers in co-operation with the National Electric Light Association and other organizations, a national "Add-A-Light" campaign will be carried on during October and November in the interests of portable lamps.

The chief purpose of this joint activity will be: (1) To introduce to the public new designs that combine 1931 style with improved illumination practice, (2) to enable merchants to move present stocks of portable lamps without price sacrifices, (3) to assist the retailer in moving more goods and thereby increase his sales and profits in a year that has been below 1929 in opportunity, and (4) to add at least one additional portable lamp in each wired home.

Nearly three hundred thousand dollars will be spent in one month in various forms of advertising that will include full-page ads in color in women's magazines, radio broadcasts over 45 stations, newspaper and direct-by-mail advertising, window and interior displays.

For use by central stations and others who do local broadcasting, a series of four 15-minute talks by national authorities on lighting, interior decoration and eye conservation, have been reproduced on records. These are available from the sales offices of either the National Lamp Works or the Edison Lamp Works at a cost of $5 each or $20 for the set of four.

The Edison and National Lamp Works are offering for use in October and November streamers and other window material for displays. All participating manufacturers have booklets or other material available for customers and prospects.

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PACIFIC ELECTRIC MFG. CORP. HAS NEW EASTERN FACTORY—A new factory office has recently been opened by the Pacific Electric Manufacturing Corporation, 5815 Third St., San Francisco, at 89 Broad St., Boston, Mass. G. A. Wright, who has had wide experience in the field of electrical transmission and distribution equipment, is in charge of the new Boston headquarters.

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THE JAMES R. KEARNEY CORPORATION, manufacturers of overhead and underground electrical specialties, 4224-40 Clayton Ave., St. Louis, Mo., has purchased the Thanders Electric Company of St. Louis, makers of T-H Equipment for central stations, line constructions, railway systems, industrials and complete substations.

Listenwalter & Gough Sell Appliance Business

Listenwalter & Gough, Inc., San Francisco, has announced the sale of its electrical appliance and radio business in northern California to the Keamper-Barrett Corporation. W. H. Kaemper was formerly manager of Listenwalter & Gough's San Francisco office and J. T. Barrett was formerly sales manager. The change became effective Sept. 1.

Listenwalter & Gough will continue in business at the same address in San Francisco, 871 Folsom St., where they will specialize in wiring devices and construction material. L. Philips is manager of the San Francisco office. The firm's headquarters will continue to be maintained at 819 East First St., Los Angeles.

Among the products taken over for distribution by Kaemper-Barrett Corporation are Royal cleaners, Meadows washers, and Hammond electric clocks.

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4,200,000-Lb. Cable Order Placed With Anaconda

A contract calling for 166 miles of 1-in. hollow-core cable has been placed by the Pacific Gas and Electric Company with the Anacoda Wire & Cable Company of California for delivery before Feb. 1, 1931. The copper itself will weigh more than 4,200,000 lb. and its shipment will require at least 60 large freight cars.

The cable will be used in the construction of a transmission line to connect up the Pacific company's new $40,000,000 hydro-electric development on the Mokelumne River with the distributing substation at Newark, Alameda County. This line will be 110 miles long, but, having two circuits, will require 220 miles of wire. Fifty-four miles in the mountain regions where severe snow and rain storms are to be expected, will be of steel-core aluminum cable. The remainder will be of copper. The line will operate at 220,000 volts. The transmission system will cost $4,260,000, and $2,000,000 more is being spent on the installation of new equipment at the Newark plant to handle the additional power.

Construction of the Mokelumne-Newark line marks the first extensive use in the West of hollow-core cable, instead of the slightly smaller solid strand. It was decided upon after exhaustive tests at the Harris J. Ryan high-voltage laboratory, Stanford University, proved that it substantially reduces losses of energy during transmission.

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THE EASY WASHING MACHINE COMPANY, LTD., has recently been incorporated in Victoria, B. C., as an extra provincial company with a paid-up capital of $726,910. Its registered offices are given as 187 Geary Ave., Toronto, and 420 Homer St., Vancouver.

Sells $3,000,000 Shell Chemical Plant Motors

The Electric Machinery Manufacturing Company, Minneapolis, Minn., of which C. F. Henderson, Call Building, San Francisco, Calif., is district representative, recently sold to the Shell Chemical Company, a subsidiary of the Shell Oil Company of San Francisco, the motor and control equipment for its new $3,000,000 plant. These motors and control will be used on the various compressors at the Shell company's new plant, which is now under construction at Shell Point, near Pittsburg, Calif. The equipment consists of three 600-hp., 128-r.p.m. synchronous motors; four 1,000-hp., 128-r.p.m. synchronous motors; two 700-hp., 109-r.p.m. synchronous motors; two 100-kw., 1,200-r.p.m. syncronous motor-generator sets; one 24-panel switchboard; and two 200-hp., 600-r.p.m. synchronous motors.

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To Distribute Standard Ranges in Northwest

The Standard Electric Stove Company, of Toledo, Ohio, has appointed the Hunt & Mottet Company, hardware jobber of Tacoma, as distributor in the Northwest for Standard Electric products, including ranges, hot plates, grills, and bathroom heaters.

W. P. Swarts, Pacific Coast district representative of the Standard company, with headquarters in Los Angeles, has changed his address from 610 South Kenmore Ave. to 629 South Serrano Ave.

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G. E. TO DISCONTINUE USE OF SLOGAN—By unanimous vote, General Electric refrigerator distributors at their annual fall conference at Association Island, N. Y., in August, decided to continue the policy of no charge for service. But because the company does not expect to continue indefinitely to absorb all costs for service, and because it has been found that the slogan, "No Owner Has Paid One Cent for Service," is being misinterpreted to mean that no service of any kind ever is required, it was decided at the meeting to discontinue the use of the slogan in the General Electric Company's advertising.

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MAYDWELL & HARTZELL, INC., with offices in Los Angeles and San Francisco, have recently been appointed Pacific Coast distributors of the electrical pole line hardware specialties and custom castings manufactured by the St. Louis Malleable Casting Company, St. Louis, Mo. The E. A. Foster Lumber Company, of Seattle, manufacturer of Douglas fir crossarms, has also appointed Maydwell & Hartzell to distribute its product on the Pacific Coast.

Personals

R. A. Sharon Goes East to Electric Bond & Share

ROBERT A. SHARON, for the past three years assistant to the vice-president and general manager of the Great Western Power Company of California, with headquarters in San Francisco, has resigned from the Pacific Gas and Electric Company, which recently took over the Great Western company, to become affiliated with the Electric Bond & Share Company in New York City. He will take up his new duties Oct. 1.

Prior to his appointment as assistant to the vice-president and general manager, Mr. Sharon had been for two years assistant sales manager for the Great Western Power Company. To take that position he had resigned as city sales superintendent for the Standard Oil Company in Bakersfield, Calif. He had joined the sales force of the Standard Oil Company in Portland following his discharge from the service in the World War, in which he was a second lieutenant in the Air Service.

ROBERT A. SHARON

Later he became service station superintendent at Seattle for that company and then held a similar position in Sacramento, Calif.

Mr. Sharon was graduated from Yale University in 1912 with a degree in electrical engineering and then entered the employ of the City Electric Company, San Francisco, as an industrial power salesman, a position in which he remained until his enlistment in the Army in 1918.

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ARTHUR D. BRAGG, formerly on the sales staff of the General Electric Company in San Francisco, has removed to Fresno and is acting as the company's sales representative in that city. Charles F. Nourse has been transferred from the engineering department of the company's San Francisco headquarters to replace Mr. Bragg in the sales department.

G. Ross Henninger Joins A.I.E.E. in New York

ELECTRICAL WEST announces with regret the resignation of G. Ross Henninger, for the past six years engineering editor of the paper, who leaves for New York City Oct. 1 to become associate editor of the *Journal of the American Institute of Electrical Engineers.*

Mr. Henninger came to the McGraw-Hill Company of California from the Southern California Edison Company where he was serving as operating assistant to E. R. Stauffacher, electrical protection engineer, and was responsible for the maintenance and operation

G. ROSS HENNINGER

of the protective relay installations of that company's system.

He was graduated in February, 1922, from the University of Southern California with the degree of B.S. in electrical engineering, and went directly to the Westinghouse factory in East Pittsburgh, Pa., where he spent six months "on the course" and a year in the supply engineering department in connection with the application of protective relays to electric power systems. Having been associated with the Edison company from 1917 until 1922, Mr. Henninger rejoined that organization in the fall of 1923 and remained there until he came to ELECTRICAL WEST on Dec. 1, 1924.

At Institute headquarters in New York Mr. Henninger will be in responsible charge of the organization and operation of the extensive changes in publication policy that were officially adopted at the summer convention of the Institute held in Toronto in June, 1930. His departure from the Pacific Coast makes necessary his resignation as vice-chairman of the San Francisco Section of the A.I.E.E., to which post he was elected last August. For the past two years he also has served as chairman of the entertainment committee of the Engineers' Club of San Francisco. He has been particularly active in following the activities of the Engineering Section of the P.C.E.A and has regularly contributed reports of the Section's thrice-yearly and convention meetings to ELECTRICAL WEST.

El Paso Company Appoints New Merchandise Manager

GEORGE C. KING has been made merchandise manager in the sales department of the El Paso Electric Company, El Paso, Texas. This change

GEORGE C. KING

became effective Aug. 23, on which date J. P. Boyden, who formerly held this position, left for Tarkio, Mo. Mr. King was formerly a power salesman with the El Paso company and was popular in company circles. He is thoroughly familiar with the present extensive sales program of the company and well qualified for his new position.

J. P. Boyden, former merchandise manager of the company, has been named sales manager for the eastern division of the Western Public Service Company. From Tarkio he will supervise sales activities in some 24 small towns in Missouri, Kansas and Nebraska.

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R. E. FISHER, vice-president of the Pacific Gas and Electric Company in charge of public relations and sales, was elected president of the Pacific Coast Gas Association at its annual convention held Sept. 9-13 at the Hotel Huntington, Pasadena, Calif. Mr. Fisher was also elected, on Sept. 24, to the board of directors of the Aviation Corporation of America, New York, which controls five of the country's principal air transport companies. For several years he has served as chairman of the aviation committee of the California State Chamber of Commerce.

E. S. CONRAD, who has been Pacific Coast district manager for the Square D Company for the past ten years, with headquarters in San Francisco, has been appointed general sales manager of the Diamond Electrical Manufacturing Company, with headquarters in Los Angeles. This concern is affiliated with the Square D Company. Mr. Conrad has been associated with Square D for fourteen years, ten years on the Coast and prior to that time in the Middle West. In his new position he will have complete charge of sales in the eleven Western states.

G. E. Lewis Heads N.E.L.A. Rocky Mountain Division

A NEW managing director, George E. Lewis, took charge of National Electric Light Association affairs in the Rocky Mountain Division on Sept. 1 under a new form of organization in that section.

The appointment of Mr. Lewis consolidates under one head various N.E.L.A. local committees and groups, subject to formal ratification by the regional convention at Albuquerque, N. M., Oct. 20-22, whereby the Colorado, Wyoming and New Mexico Utility associations pass out of existence, along

GEORGE E. LEWIS

with the Rocky Mountain Committee on Public Utility Information, of which Mr. Lewis has been executive manager since 1922.

During Mr. Lewis' incumbency as head of the information unit, many innovations along publicity lines were made in the Rocky Mountain Division and became widely practiced. Notably, public speaking classes which germinated the N.E.L.A. national contests had their beginning in Colorado, Wyoming and New Mexico utilities groups; also educational activities in colleges and schools were vigorously fostered under the Lewis regime; and the International Advertising Association accorded recognition to the advertising program developed in the Rocky Mountain Division.

A newspaper man with twelve years' reportorial experience, the incoming N.E.L.A. managing director for the Rocky Mountain Division has a background that fits him admirably for the type of work in which he has been and is now enaged. His more comprehensive duties will be directed from offices in the Gas and Electric Building, Denver, Colo., which have been headquarters of the information committee since its inception eight years ago.

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FRANK E. BONNER, executive secretary of the Federal Power Commission, with headquarters in Washington, D. C., during September made a brief business trip to the Pacific Coast.

E. A. CRELLIN, Pacific Gas and Electric Company, recently elected secretary of the San Francisco Section, A.I.E.E., automatically succeeds to the vice-chairmanship of the Section Oct. 1 upon the resignation of G. Ross Henninger, recently elected vice-chairman, to join the *Journal of the A.I.E.E.* in New York City. E. F. Maryatt, of the Pacific Gas and Electric Company, succeeds Mr. Crellin as secretary of the Section, and Paul Ost, Department of Electricity, City of San Francisco, has been appointed to fill the vacancy thus created on the executive committee.

LESTER L. GRIBBLE, a member of the San Francisco sales force of the Electrical Specialty Company, Inc., is sufficiently improved in health to have returned to his home from the hospital where he has been for some time. It is not expected that he will engage in business actively for another two months.

CHARLES H. CUTTER, district manager for the Pacific Electric Manufacturing Company, with offices in the Liggett Building, Seattle, has been named acting district manager of his company's Portland office, a position recently made vacant by the death of T. L. High.

W. DEP. TARDIF, formerly associated with the General Electric Supply Corporation in San Francisco, has joined the northern California sales force of Walker Brothers, manufacturers of electrical construction material, 50 Hawthorne St., San Francisco.

HARRIS J. RYAN, professor of electrical engineering, Stanford University, Calif., has been made a member of the Edison Medal Committee of the American Institute of Electrical Engineers.

D. C. WESTAWAY, formerly with the Electric Corporation, San Francisco, has joined the sales force of the Electrical Specialty Company, Inc., in that city.

ROLAND H. BROCK, a member of the record department, San Diego Consolidated Gas & Electric Company, San Diego, Calif., spoke before the San Diego Electric Club at its meeting on Sept. 23 on "The Romance of the Spanish Land Grants in San Diego County."

H. W. SMITH, who was formerly sales manager of the Kirsch Manufacturing Company, Sturgis, Mich., has been appointed sales manager of the Majestic Electric Appliance Company, Inc., of San Francisco.

W. S. LEE, president and chief engineer of the Duke Power Company, Charlotte, N. C., during the course of his recent trip to the convention of the American Institute of Electrical Engineers, of which he is president, addressed Sections of the Institute in Vancouver, Portland, San Francisco, Los Angeles, Salt Lake City, and Denver.

E. R. STAUFFACHER, Southern California Edison Company, Ltd., with S. C. Dickinson, C. H. Delany, and J. O. Tobey, of the Pacific Gas and Electric Company, and W. A. McMeekin, of the Los Angeles Gas and Electric Corporation, committee chairmen of the Engineering Section, Pacific Coast Electrical Association, will attend the N.E.L.A. section group meeting at the Windsor Hotel, Montreal, Oct. 6-9, 1930.

LLOYD JOHNSON, has been appointed merchandise manager for the Denver branch of the Graybar Electric Company, succeeding George N. Hoffman, who has been transferred to the company's El Paso (Texas) branch. Mr. Hoffman succeeds H. M. Dillon, who has severed his connection with the company.

J. H. BARNETT has been appointed Pacific Coast representative of The W. J. Loth Stove Company. Mr. Barnett comes to the Coast from the Loth company's factory at Waynesboro, Va., and is at present making his headquarters at the office of the General Sales Corporation in San Francisco.

Obituary

THORNTON L. HIGH, for the past year manager of the Pacific Electric Manufacturing Company's branch office in Portland, Ore., was found dead on a lonely road near that city, Sept. 5. He had apparently committed suicide. Prior to his residence in Portland he had been employed by the Pacific Electric Manufacturing Company in the engineering department of its San Francisco office for six years.

R. C. W. LIBBEY, for the past four years in the range sales department of the Great Western Power Company, San Francisco, died in that city Aug. 5. Mr. Libbey had formerly been a representative in various Western states of both the Simplex Electric Heating Company, Cambridge, Mass., and Landers, Frary & Clark, New Britain, Conn.

JOHN H. PURDY, vice-president of the Wuelker Reflector-Light Corporation, San Francisco, died in Los Angeles on Aug. 10 at the age of 82 years. Mr. Purdy was the father-in-law of William E. Wuelker, president of the Wuelker corporation.

ALFRED H. DENIKE, special representative of the Bureau of Public Relations, Pacific Gas and Electric Company, San Francisco, died in that city Aug. 25. Mr. DeNike had been in the employ of that company about seven years.

JOHN WALTER PHILLIPS, for many years superintendent of flumes and ditches of the Sierra Pacific Power Company, Reno, Nev., died there on Sept. 15.

Contractor
Dealer
Inspector

Northwest Inspectors Stress Adequacy

Code Issues Provoke Debate as Industry Speakers Present Ideas for Greater Flexibility of Rules on Installation Methods at Convention in Bellingham

DISCUSSION of many controversial points at issue in the development of the National Electrical Code and electrical ordinances, both by prominent men in the industry and by the large attendance of electrical inspectors, occupied the three days of the fifth annual convention of the Northwestern Section, International Association of Electrical Inspectors at Bellingham, Wash., Aug. 25-27, 1930.

In the president's address, C. H. Fletcher, chief electrical inspector of Vancouver, B. C., made a plea for uniformity in municipal codes and drew attention to the close communion of interests between British Columbia conditions and those existing in the Northwestern states across the line.

Considerable discussion was aroused by the paper, "The Electrical Inspector From the Power Company's Viewpoint," by R. M. Boykin, formerly of the Puget Sound Power & Light Company, Seattle, but now with Electric Bond & Share Company, New York.

It was read in his absence by M. T. Crawford, Puget Sound Power & Light Company, Seattle. In it a plea was made for a simpler code confining itself to the avoidance of demonstrated hazards and free from restrictions which tend to hamper the development of the art.

"The fundamental responsibility of the inspector is," he said, "to see that electrical installations are such as to provide every reasonable safeguard against personal injury and fire hazards to property, and at the same time to permit as inexpensive an installation as possible without jeopardizing safety."

Some disagreement was voiced with the fundamental principles expressed in Mr. Boykin's paper; and a reference in the paper to the local code restrictions on the placing of transformer vaults in consumers' premises, raised such questions as to prompt Mr. Crawford to present a very interesting impromptu discussion of alternating current networks now being installed by many of the companies operating in the larger cities.

Bringing out the fact that the maximum super standards of the last decade become, in the natural course of development, the minimum safe standards of the present day, A. Penn Denton, of the National Electrical Manufacturers' Association, New York, voiced the opinion that minimum safe standards represent the extent to which the code can go in legislating adequacy.

Maximum super standards will always have to be sold through the regular commercial channels of the industry, he declared, and indicated that recent surveys had brought forcibly to the attention of the industry the total inadequacy of some of the earlier installations now hampering commercial growth and creating a definite hazard. He stated that the industry was apparently revising its ideas as to what constitutes minimum safe wiring, which is, after all, a purely relative question. In the discussion which followed, opinion was somewhat divided as to how far the code should go at the present time in increasing its adequacy requirements beyond the mains and feeders.

A plea that the inspector regard himself and his work with all the dignity and importance with which the profession should be clothed was the pith of an inspirational message, "Still Waters Run Deep," from William S. Boyd, president of the I.A.E.I., Chicago, partaking of many of the elements of a sermon. Specific admonitions, included the following: (1) Read good books and look for inspiration in them; (2) study the lives of great men and emulate their examples; (3) cultivate a taste for poetry which generally contains more great ideas than prose; (4) search for the good in those with whom you come in contact; (5) set your thoughts down on paper so that they will become clearer to you; and (6) frequently commune with nature.

H. G. Ufer, Underwriters' Laboratories, Inc., Chicago, explained the labeling by the Underwriters' Laboratories of cutout boxes, cabinets, panel boards, enclosed panel boards, enclosed branch circuit cutouts, and enclosed switches, and described the limits of such equipment as inspected and labeled. He also outlined the organizations with which the Laboratories work in close relation, naming the National Board of Fire Underwriters, National Fire Protection Association, U. S. Bureau of Standards, and American Standards Association.

The development of the manufacture of non-metallic sheath cable, with particular reference to Romex from its earliest appearance in 1923 to the present day, was explained by O. R. Grant, General Cable Company, San Francisco. He showed that the principal application of this material was found in rewiring inadequately wired buildings where metallic systems were not originally used. Tests applied to non-metallic sheathed cable by the Underwriters' Laboratories were fully described.

A very complete outline of the forms and procedure used by the inspection department of the City of Portland in executing its work of issuing permits and carrying on inspections was presented by A. M. McLean, deputy electrical inspector, Portland. Discussion indicated the value of such material to other inspection departments, and at the suggestion of V. H. Tousley, secretary-treasurer, I.A.E.I., it was decided to establish a standing committee to gather data of a similar character from other inspection departments with a view to making such data available to a national committee, which would develop standard systems for inspections and the records thereof suitable for use in communities of different size.

Committee Reports

Reports of the various article committees and other standing committees of the association, making recommendations for modification of the National Electric Code and for action pertaining to local matters, were presented at various times throughout the sessions. Each of these was discussed in turn and, through action of the convention as a whole, either accepted as progress or made the subject of a definite recommendation from the Northwestern Section to the national body for presentation to the electrical committee. A summary of these reports, the discussions thereon and action taken follows.

The report of the Electrical Fire and Accident Committee, read by J. A. Casey, Walla Walla, Wash., deplored the lack of adequate information on the causes of fires and accidents in the territory due to the lack of responses received from the various inspection departments. Mr. Tousley advised the meeting that the national committee on this subject had developed a form for reporting such data which should in the future simplify the work of the committee.

S. B. Clark, Northwestern Electric Company, Portland, presenting the report of the Article 4 Committee on Services and Service Equipment, pointed the way to less expensive range wiring by advocating a clarification of the code to permit the installation of a non-fused entrance switch with meter or meters connected ahead of the switch and branch fuses. The report provoked considerable discussion and was finally ac-

Southwestern Inspectors Convene

All details of the program and plans for the annual convention of the Southwestern Section, I.A.E.I., to be held at Hotel Maryland, Pasadena, Calif., Oct. 6-8, 1930, are completed, according to President A. E. Johnstone and Claude Mitchell, secretary. Addresses by prominent men in the industry have been limited to one each session. All the remainder of the time is to be devoted to discussion of inspectors' problems, interpretations of the code and safety orders, recommendations for changes in the National Electrical Code, and similar subjects.

The prominent speakers are to be W. S. Boyd, Chicago, president of the I.A.E.I.; A. Penn Denton, National Electrical Manufactors Association; H. B. Kirkland, The Society for Electrical Development, Inc., New York; Professor Fenner, California Institute of Technology, Pasadena; H. C. Rice, Southern California Edison Company, Ltd., Los Angeles; and V. H. Tousley, secretary-treasurer of the I.A.E.I. and field engineer for the N.F.P.A. Entertainment features are in charge of R. H. Manahan, chief of the department of electricity, Los Angeles, and inspectors in the surrounding towns.

cepted as progress without definite recommendation being offered.

The report of the Article 5 Committee, read by J. H. Sroufe, recommended certain changes in wiring methods using armored cable, metallic tubing, and knobs and tubes. Principal discussion centered around a recommendation to limit the number of circuits of armored cable carried through one junction box and the restriction of the use of armored cable in unceiled basements in existing buildings. With a few modifications of the wordings of the recommendations, the report was passed for submission to the electrical committee.

The existence of a wide variation in methods of connecting electric ranges was shown by the report of the range wiring committee to militate against the development of regulations for standard range wiring. A. M. McLean, chairman, recommended that action of the association be deferred until some uniformity in the manner of connecting ranges be established.

The legislative committee for Oregon outlined the efforts made by the various interests in the state to secure a new law covering a building safety code which would include an electrical code. Progress toward agreement among the various organizations affected was reported.

The report of Article 6 Committee as presented by R. E. Thatcher, Puget Sound Power & Light Company, Seattle, recommended increasing the allowable carrying capacity for No. 12 wire from 25 to 30 amp. and of No. 10 wire from 30 to 35 amp. It also recommended the adoption of the demand factor tables for space heaters developed by the Southwestern Section, I.A.E.I. These recommendations were adopted by the convention and certain other suggestions in the report were referred back to the committee.

The report of the metal wireways committee recommended that the committee's name be changed to "committee on auxiliary gutters" to distinguish the type of construction considered by the committee from a possible new wiring method. The committee then defined auxiliary gutters being sheet metal enclosures designed to contain wires, cables or busbars, and circuit or feeder taps connected thereto, when used at distributing centers and meter boards. Complete regulations covering the construction and use of such gutters were then outlined and the report in total was adopted by the convention.

In addition to the recommendations on grounding offered at last year's convention, the grounding committee report, presented by J. A. Casey, recommended that Article 9 be amended to permit the connection of electrically heated appliances to three-phase ungrounded circuits, provided the frame of the appliances is grounded in accordance with Section 1606-a. This recommendation along with others in the report was adopted by the convention, but a recommendation that all secondary neutral or grounded conductors be interconnected to form a grounded secondary neutral grid was rejected.

Golfbugitis, a common disease, found easy victims in these members of the electrical inspectors at the convention of the Northwest section of the I.A.E.I. in Bellingham, Wash., in August. Left to right, they are A. M. McLean, deputy electrical inspector, Portland; Fred Block, G. E. Supply Corporation, Seattle; E. L. Knight, E. L. Knight Electric Company, Portland; and L. W. Going, chief electrical inspector, Portland. The first three won cups

I. B. Sturgis, chairman of the Article 27 Committee on Radio Equipment, recommended: (1) that some means be provided for adjustment of receiving sets to line voltages and for proper fuse protection; (2) that rules be drafted governing the installation of radio interference elimination devices; (3) that rules be drafted governing the installation of public address or special amplification systems; (4) that there be a more general enforcement of the rules under Article 27. This report was adopted by the convention.

The report of the Article 8 Committee, presented by L. R. Elder, discussed automatic overload protection for group motor installations, recommending among other changes that feeder capacity for such installations be provided on the basis of the total full load amperes of all the motors in the group if the horsepower rating of the largest motor is less than 40 per cent of the total horsepower of the group; provided, however, that a diversity factor may be allowed by authorities having jurisdiction. Changes in wording of some of the clauses of the code pertaining to overloaded protective devices were suggested to clarify their meaning. The report was adopted.

The uniform ordinance drafted and presented for approval by Frank C. Lyman, chairman of the uniform ordinance committee, was found in some respects not to meet all conditions in the territory and was referred back to the committee for modification.

H. A. Patton, chairman of the legislative committee for Washington, presented resolutions placing the association on record as approving the passage of a bill substituting the National Electric Code for the present rules used in the state, and further recommending that the Bureau of Labor and Industry adopt the National Electrical Safety Code in lieu of present regulations for outside wiring. These resolutions brought before the convention by the resolutions committee at the last session were unanimously passed.

The report of the code clearing house committee presented by its chairman, L. W. Going, chief electrical inspector, Portland, embodied a number of recommendations already presented in individual committee reports. General recommendations were made covering the elimination of substandard products, vertical bus distribution in buildings, a clarification of fixed and portable appliances, and adequacy. On the latter subject, the report recognized that adequacy in wiring is inseparably tied up with the question of safety, and urged that the I.A.E.I. should undertake responsibility for the establishment of adequacy standards. Specific recommendations for code modifications were made by the report in a number of the articles. The convention adopted the report as presented.

In the open forum just preceding the election of officers, the subject of temporary installations by amusement companies was discussed, and it was decided that a special committee should be formed to draw up rules governing such installations, which, being uniform throughout the territory, would assist inspectors in insisting that such companies provide safe equipment. A suggestion was made that eventually No. 12 wire would be the minimum sized wire used throughout all electrical wiring instead of No. 14, and that the association might well consider taking the leadership in bringing about the adoption of this minimum.

Action was taken preparatory to amending the by-laws of the association to include Utah in the Northwestern Section.

Officers elected for the ensuing year at the final business session were:

President—C. E. Foster, electrical inspector, Astoria, Ore.; vice-president—J. A. Casey, electrical inspector, Walla Walla, Wash.; secretary-treasurer—F. D. Weber, electrical engineer, Oregon Insurance Rating Bureau, Portland. Elected members of the executive committee, were: F. H. Rogers, electrical inspector, Medford, Ore.; E. G. S. Pryor, Underwriters' Laboratories, Inc., Seattle; W. C. Mainwaring, Northern Electric Company, Vancouver, B. C.; J. H. Sroufe, Jaggar-Sroufe Company, Portland; and L. R. Elder, General Electric Company, Portland.

H. A. Patton, electrical engineer, Washington Surveying and Rating Bureau, Seattle, was selected to represent the Northwestern Section on the executive council.

Salem, Ore., was chosen as the meeting place for the 1931 convention.

The banquet on the last night was attended by a number of city officials and representatives of service clubs of the city of Bellingham, to whom the aims

Some more "inspectors" who made a "holey" pilgrimage to Bellingham, Wash., for the August convention. Left to right, they are Ivan Latta, Graybar Electric Company, Seattle; W. C. Kidder, Grays Harbor Railway & Light Company, Aberdeen; R. I. Rowe, Puget Sound Power & Light Company, Bellingham; W. C. Mainwaring, Northern Electric Company, Vancouver, B. C.; and Howard Mills, electrical contractor, Bellingham, who won a prize for high gross score—about 150

and purposes of the association were explained by V. H. Tousley as principal speaker. Golf prizes were also awarded at this function, the cup and first prize going to E. L. Knight of the E. L. Knight Electric Company, Portland.

An exhibit of electrical equipment was an important feature of the convention. The exhibitors were:

Crouse Hinds Company, Syracuse, N. Y., displaying lighting projectors; Electric Products Corporation, Seattle; General Cable Corporation, displaying Romex non-metallic sheath cable; George A. Gray Company; San Francisco, displaying a section of the Wiremold school; Square D Company with its affiliated companies, Industrial Controller, Milwaukee, and Diamond Electrical Manufacturing Company, Los Angeles; Steel & Tubes, Inc., Cleveland, displaying thin wall conduit; Trumble Electric Manufacturing Company, Plainville, Conn., with its affiliated company, A. G. Manufacturing Company, Seattle, displaying motor control equipment; and Westinghouse Electric & Manufacturing Company, also displaying motor control equipment.

The arrangements for the convention were taken care of by committees of the electric clubs of Whatcomb and Skagit Counties, with H. S. Jenkins, chief electrical innspector, Bellingham, Wash., and a past president of the association, as general chairman.

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NORTHERN CHAPTER PLANS QUARTERLY MEETINGS—Quarterly meetings between members of the executive and advisory committee and selected delegates from each of the communities in the territory were decided upon as the method of continuing the work of the Northern Chapter, California Electragists, at a meeting of the executive committee held Sept. 5, in San Francisco. Walter Vance, Oakland, chairman of the Northern Chapter, presided.

The first such meeting will be held Oct. 3, at the Call Building, at 2 p.m., San Francisco.

New Products

Hotpoint Christmas Range

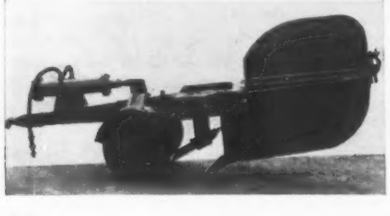
The Hotpoint 1931 Christmas range, produced especially for Christmas range campaigns, has been announced by the Edison General Electric Appliance Company, Inc., Chicago. Equipment of the new range includes: A modernistic Telechron clock and timer, automatic egg cooker, automatic time-controlled outlet for timing a coffee percolator or other appliance, adjustable floor plates for leveling the range and protecting the floor, a warming drawer beneath the oven, automatic temperature control and thermometer, thrift cooker, smokeless broiler, opal glass condiment jars, electric light over cooking surface, and sliding cooking chart of porcelain enamel beneath the top shelf.

No list price has yet been established on this range, but it is intended for sale within popular price limits.—ELECTRICAL WEST, Oct. 1, 1930.

Cable Layer

The American Tractor Equipment Company, Oakland, Calif., has developed and is now placing on the market the Ateco cable layer for laying armored cable to depths as great as 30 in. without digging trenches. This tool was designed for use with "Caterpillar Sixty" tractors.

Instead of the usual five teeth, the Ateco cable layer has only two, one behind the other. At the lowest depth, the front tooth cuts to a depth of about 18 in., the rear tooth, which is 4 in. wide, to a depth of 30 in. The actual depth is accurately and easily controlled from the tractor seat, according to the manufacturer. Attached to the rear of the frame is a dirt shield encasing guide rollers for the cable and a cable wheel mounted on roller bearings. A trailer hitch is provided for attaching a trailer to carry reel and cable. The cable to be laid leads from the reel over the top of the cable wheel, around the wheel and underneath. The operator sets the control for the desired depth and the cable is laid in one operation as the tractor pulls the cable layer forward.—ELECTRICAL WEST, Oct. 1, 1930.



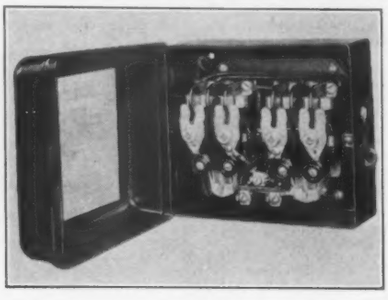
Reversing Contactor

The Industrial Controller Division of the Square D Company, Milwaukee, Wis., has brought out a new small motor reversing contactor designated as Class 8711. This contactor is for use primarily for operating the control on small machine tools and for window opening and closing apparatus. It is manufactured in two types, one for two-wire control only and one for two- and three-wire control, and may be wired for controlling single-phase, three- or four-wire reversible motors, or three-phase motors.

The starter consists of two double-pole, double-break contactors which are mechanically interlocked and mounted side by side on a sheet-steel panel in a sheet-steel case. The contacts, both movable and stationary, are of silver.

Contactor armatures are of the full floating type, and wiring terminals are conveniently located at the top.

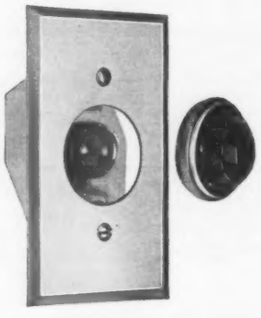
These starters are for use with single- and three-phase motors, 1½ hp., 110 volts, 3 hp., 220 volts. The size of the enclosing case is 8½ in. wide, 6½ in. high, and 4¼ in. deep. The net weight is only 7½ lb.—ELECTRICAL WEST, Oct. 1, 1930.



Trunnion Suspension Clamps

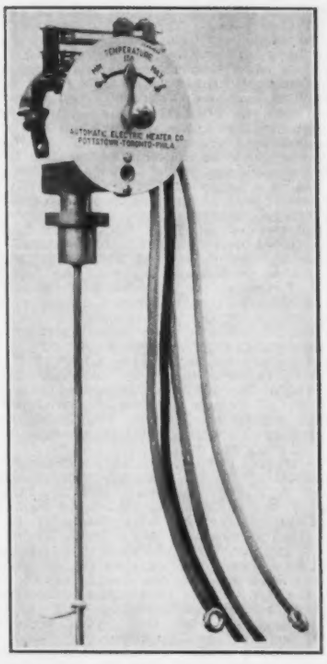
A light-weight trunnion type suspension clamp of copper-bearing forged steel for conductors ranging in sizes from ¼ in. to 2¼ in. is announced by the Lapp Insulator Company, Le Roy, N. Y. The clamp has a locking device utilizing a lock washer between serrated teeth on the lock and nut body ears, so that the nut once in place cannot be loosened by continued vibration. There are no U or J bolts, the clamp being forged integral with the keeper. A substantial ⅞-in. square section is provided for attaching any type of arc protection device.

The trunnion clamp will aid materially in gentle handling of the conductor to the end that less local bending stress will have to be absorbed by the conductor in the clamp, according to the manufacturer.—ELECTRICAL WEST, Oct. 1, 1930.



Bullseye Face Plate

A new type of pilot light face plate with removable bullseye for use on electric ranges has been brought out by The Hart Manufacturing Company, Hartford, Conn. The bullseye is threaded to the face place, making it easily removable for the renewal of pilot lamps.—ELECTRICAL WEST, Oct. 1, 1930.



Water Heater Thermostat

The electric thermostat control illustrated is a feature of Sepco electric water heaters manufactured by the Automatic Electric Heater Company, Philadelphia.

A Bourdon tube in connection with a vapor tension coil actuates the contact points, which steps up the current to the nicrome element—1,500 watts at a step—until the full load of 4,500 watts is cut in. This coming onto the line in steps makes voltage flickers hardly noticeable in the owner's lights or radio.

The vapor tension coil is of bronze. It expands and contracts readily under heat or cold and is so finely calibrated that it never varies over 2 deg. minus or plus, according to the manufacturer. A temperature adjusting thumb nut allows for a variation in water temperatures ranging from 120 to 180 deg. F. By removing a set-screw the entire assembly may be removed with the thumb and finger.—ELECTRICAL WEST, Oct. 1, 1930.

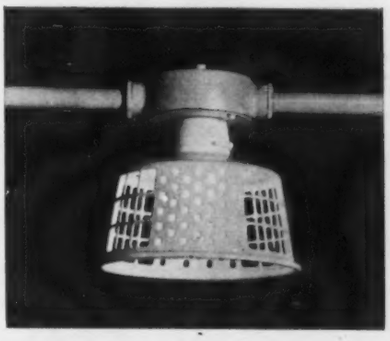
Meter Test Switch

A new 60-amp. meter entrance switch has been announced by the Bull Dog Electric Products Company, Detroit. Small and easily wired, the switch is of approved meter test type, designed for surface or flush mounting. It is externally operated from the front, fuses being dead when accessible.

The switch takes up but little space, and the manufacturer points out that through ease of wiring, installation costs are low.—ELECTRICAL WEST, Oct. 1, 1930.

Corridor Lighting Fixture

A new corridor lighting device designed especially for lighting library bookstacks has recently been perfected by Snead & Company, of Jersey City, N. J. The principle upon which this aisle light reflector has been built is that of control of light by means of a perforated reflecting surface, the amount of light passing through being regulated by the size and position of the perforations, and the rest reflected by a white vitreous enamel inside surface to distant books. A light baffle along the axis of the aisle protects the eyes from glare and has the effect of softening the illumination, according to the manufacturer. It has been found that when the reflectors are spaced 6 to 7½ ft. apart, the rays from one properly overlap those from the other and the shadow of the baffle does not strike the books.



Reflector and receptacle were worked out together so as to obtain the maximum amount of headroom. While designed especially for library bookstack corridors, the new reflector is well adapted for use also in storage rooms of factories, merchandise houses or public buildings wherever records, files or stock materials are stored in narrow, low ceilinged corridors.—ELECTRICAL WEST, Oct. 1, 1930.

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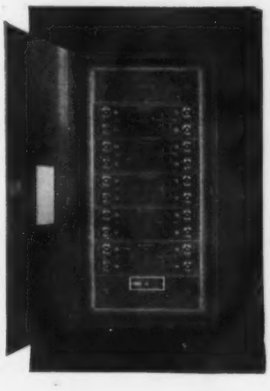
Panelboard and Cabinet

A new "Leader" type panelboard made up of one-piece molded sections of natural brown Bakelite with stippled finish face, mounted on one-piece galvanized steel mounting backs, has been announced by Frank Adam Electric Company, St. Louis.

All parts are either molded into the section or secured by rivets molded into the section. Each section contains four 30-amp., single-pole, heavy-duty, quick-make and quick-break tumbler switches with Edison plug fuse connections for four single fuse branch circuits. A mechanical "kick-off" feature permits the operation of the switch



from the "on" position to the "off" position independent of the operating spring. Switch blades are of the laminated type. Each switch has a molded Bakelite handle and small number plate with embossed numerals.—ELECTRICAL WEST, Oct. 1, 1930.

Motor Starting Switch

For convenient starting and stopping of small d.c. and polyphase motors, Cutler-Hammer, Inc., Milwaukee, offers a new 2-pole, push-button operated starting switch with thermal overload relays. This new starting switch can be used with d.c. motors up to ½ hp., 115 volts and ¼ hp., 230 volts, or with single, two, or three-phase a.c. motors up to 2 hp., 110 to 550 volts. Small in size and easily wired, the switch can be mounted right on the machine, at the operator's finger tips. For machinery builders, an open type switch for building directly into the machine, is offered.

Double-break, silver contacts and a quick-break contact mechanism assure long life and continuous current carrying capacity. The thermal overload relays disconnect the motor as soon as an overload becomes dangerous. When tripped by an overload, simply pushing a button resets the relay and starts the motor.—ELECTRICAL WEST, Oct. 1, 1930.

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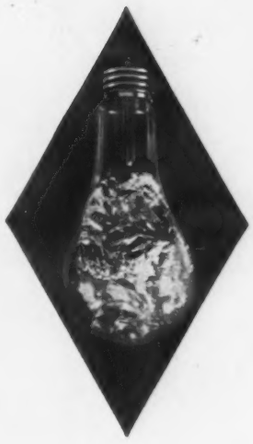


Photoflash Lamp

A "Photoflash" lamp, to be used for either professional or amateur photography, has been announced by the General Electric Company, Schenectady, N. Y.

The Photoflash lamp has a voltage range for operation from 1.5 to 125 volts. It can be used on the usual 115-volt circuit in the standard screw socket, or with a flashlight or storage battery. There is no fire hazard, as the flash is confined within the bulb; likewise, there is no smoke, no noise, and no odor. This feature makes it excellent for use in many places where smoke, odor, and noise are objectionable. Unlike powder, the lamp is not affected by weather, a feature which makes possible its use for pictures otherwise unobtainable. The flash is so instantaneous that there is no staring or blinking of the eyes. There is no sound. Pictures can be taken without interrupting in any way the activity of the group being photographed.—ELECTRICAL WEST, Oct. 1, 1930.

Industrial Heat Thermostat

The General Electric Company, Schenectady, N. Y., announces the CR-2992-A-1 thermostat for use with industrial heating units where very close control of the heat is not required. The new device is available in three principal ratings, and the operating ranges are (1) 60 to 200 deg. F.; (2) 150 to 300 deg. F.; and (3) 250 to 400 deg. F. The current-carrying capacity is 15 amp. at 115 or 230 volts a.c.; or ¼ amp. at the same voltages d.c. The thermostat will operate with a differential of 5 per cent of the maximum temperature range.—ELECTRICAL WEST, Oct. 1, 1930.

Trade Literature

¶ PROJECTION WELDING—Projection welding with A. E. F. welding machinery is described in a booklet just published by the American Electric Fusion Corporation, 2610 Diversey Ave., Chicago. A spot welding questionnaire is included with the book on which specific information concerning its needs may be given the manufacturer by any concern in the market for a spot welder.

¶ DE-ION GRIDS—A series of papers presented during the 1930 mid-winter convention of the American Institute of Electrical Engineers, and the discussions which followed, together with several magazine articles on de-ion grids, have been reprinted by Westinghouse in special publication No. 1881 entitled " 'De-ion Grids' for Oil Circuit Breakers."

¶ OIL CIRCUIT BREAKERS—Pacific floor mounted type RW oil circuit breakers are the subject of Bulletin No. 35 recently issued by the Pacific Electric Manufacturing Corporation, San Francisco.

¶ PIN-TYPE INSULATORS—"Highlights of Pin-Type Insulator Development" is a booklet that has been prepared by the Ohio Brass Company, Mansfield, Ohio, to outline that part of the development of adequate insulation that has to do with transmission voltages on lines of from 13,000 to 77,000 volts.

¶ "THE MAGAZINE OF LIGHT"—Under this title the house magazines of the Edison Lamp Works and the National Lamp Works, departments of the General Electric Company, which formerly appeared as "Light" and "Revenue, the Magazine of Light," have been consolidated.

¶ "TUBELETS"—In its distributor's cost sheet No. 262 The Thomas & Betts Company, 15 Park Place, New York, announces a new line of "tubelets," electrical outlets designed for use with metallic tubing.

¶ SUSPENSION INSULATORS—"The Locke Sign," a booklet recently issued by the Locke Insulator Corporation, Baltimore, Md., is a catalog of the suspension type insulators manufactured by the Locke corporation.

¶ BRAKES—Type WB brakes for mechanical and electrical operation, manufactured by The Electric Controller & Manufacturing Company, Cleveland, Ohio, are described in the company's Bulletin No. 1004-AF, which shows many installations on cranes and mill drives.

¶ MOTORS—A presentation of its facilities for serving motor buyers is made in a recent booklet of The Master Electric Company, Dayton, Ohio, entitled, "Your Guarantee for More and Better Master Motors."

¶ G. E. PUBLICATIONS—Recent publications released by the General Electric Company, Schenectady, N. Y., include the following:

GEA-1161: Arc Welding Structural Steel.

GEA-1280: Centrifugal Compressors.

GEA-1291: Copper Brazing and Copper-Brazing Furnaces.

GEA-546A: Carrier-Current Telephony.

GEA-566B: G-E Novalux Traffic Signals.

GEA-1259: The Modern Trolley Bus.

Barometer

INDUSTRIAL activity in the West continues to be on a much higher level than in the rest of the country, gaged by reports of electrical energy consumption of some 400 establishments in this section.

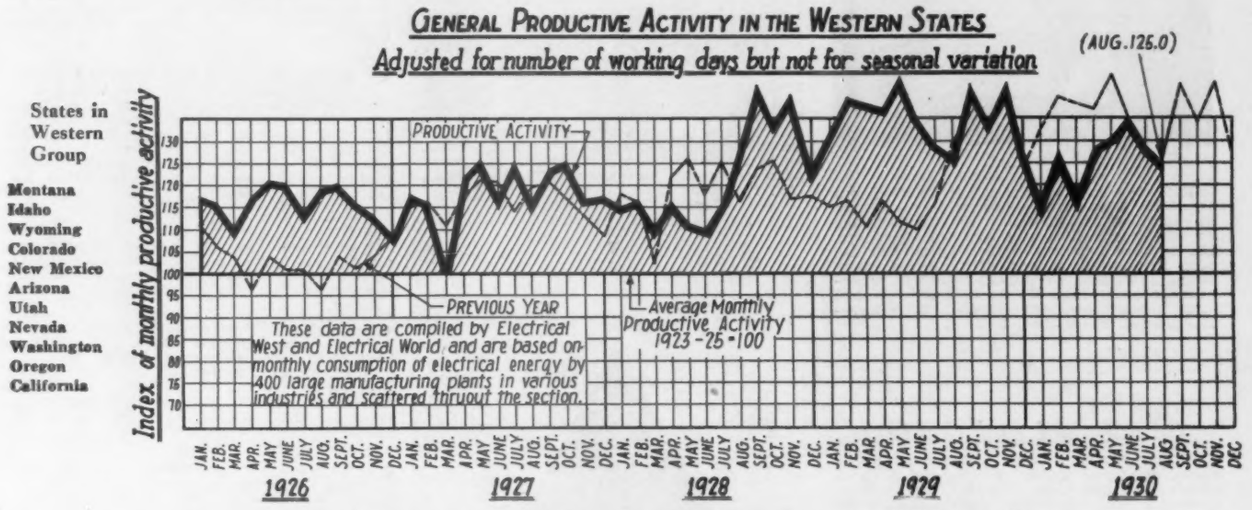
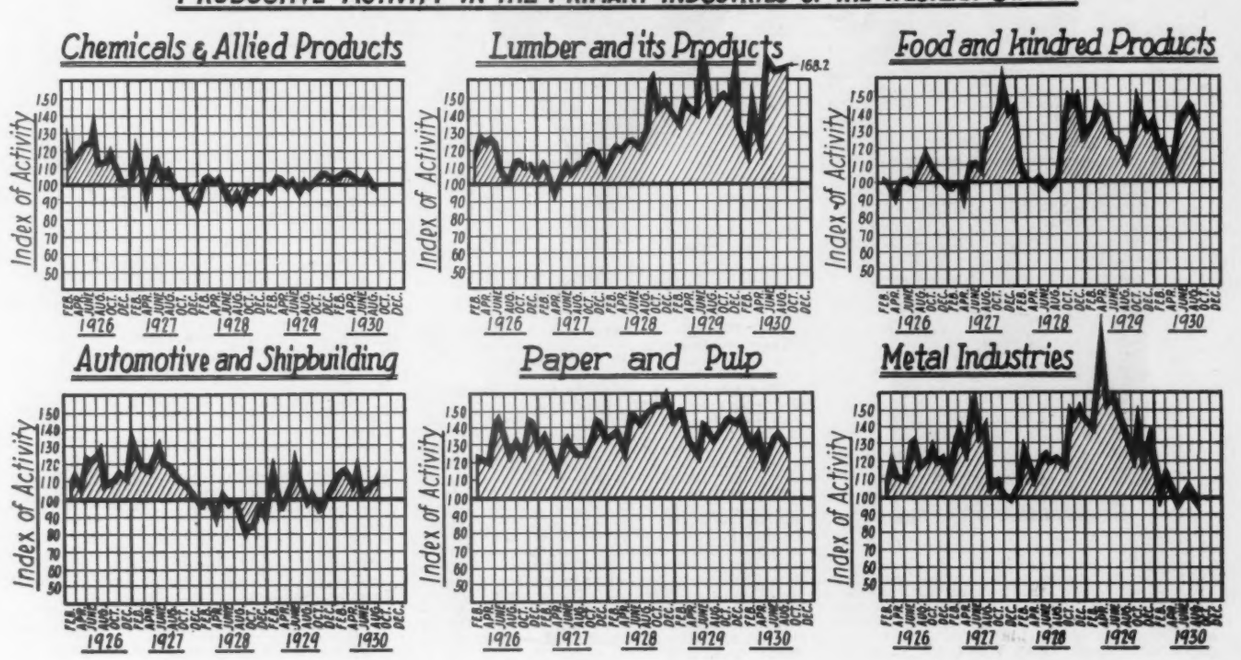
The past three months' "all industry" index figures are almost identical with those for the corresponding period of 1929, June and July differing negligibly and August being lower by only 1.6 per cent. In contrast, the August figure for the United States as a whole is 17.6 per cent lower this year than last.

Compared with other recent months, August was 3.1 per cent below July, 7.4 below June, 4.2 below May, and 2 per cent below April. For the first eight months, 1930 averages 7 per cent below 1929.

In the important food, lumber and chemical industries the changes from July were slight, the largest being a drop of 3 per cent in food products. Paper and pulp, as well as the stone, clay and glass group also remained close to July levels. The metals group dropped 6 per cent, losses being especially notable in the metal-working plants of this group.

Contrasted with August, 1929, last month's figures in the chief industrial groups are higher in chemical, food, and particularly lumber products, but lower in paper, rubber, the stone-clay-and-glass group, and metals—the last-named by 26 per cent.

Indexes of Industrial Activity in the Western States

(All figures adjusted for number of working days)

	August 1930	July 1930	August 1929	Average, first 8 months 1930	Average, first 8 months 1929
All industry	125.0	129.0	127.0	125.9	135.4
Chemical and allied products	96.7	97.5	95.7	104.6	97.7
Food and kindred products	135.0	139.2	124.5	132.6	132.5
Forest products	168.2	167.8	151.0	156.8	154.0
Metals group	91.1	96.8	123.8	101.1	152.8
Paper and pulp	129.2	130.7	139.0	132.7	141.3
Rubber and its products	140.5	154.0	154.0	163.7	190.9
Shipbuilding	115.1	109.8	106.4	113.5	105.9
Stone, clay and glass	103.3	104.9	123.5	101.2	139.6